

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 20.

JAMES D. MAHER,
Commissioner.

*Complainant 'Exhibit No. 20.
James D. Maher,
Commissioner.*

DATA

*RELATING TO WATER SAMPLES Nos. 1 to 931
FROM NEW YORK BAY & VICINITY
EXAMINED BY THE METROPOLITAN SEWERAGE COMMISSION, 1907
SHEETS 1 to 83 incl.*

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Date & Hour	No. Samples taken	Serial Numbers	Depth of Sample	Bacteria per C.C.	Dextrose Broth 48 hrs		Turbidity	Color	Chlorine Pp. per ml.	Tide	Wind	Temp of Water	Location & Remarks
					Presumptive B. Coli	L.C.C.							
Jan 9-07													
1:00	1	1	1					30	10400	Flood		7°	N. River 200' SE Pier 1
1:30 a.m.	1	2	5					25	7800	Ebb			" " " End " "
2:00 "	1	3	10						13100	Foul of flow	Light W.		150' S.W. End 49 St. Sewer B'g'n
2:30 "		4	10						13600	1st Ebb	N.W. 7-8 m	4½°	50' off Pier 53 B'g'n
3:00 "		5	10						13000	Ebb	" " "		1/2 bet Atlantic Club & Edison
3:30 "	4	6	20						12600	"	" " "		" " " " "
4:00 "		7 (4)	10						11800	"	" " "		Anchorage of A.B. Club
4:30 a.m.		8	10					17½	11200	Flood	N.W. 8 m	3	"
5:00 "	2	9	10					17½	12200	1st Ebb	" "	3	200 yds E. Can buoy #14
5:30 "	2	10	10					30	11600	Flood	N.E. slight		Mouth 49 St Sewer B'g'n
6:00 "		11	10					25	12000	"	"		75' off " " "
6:30-7:00	3	12 (4)	1'	280000					2200	Slow low	N.W. mod	4½°	49 St B'g'n 100' from
7:00 "		13	20'	40000					10400	"	"	1½°	sewer outlet
7:30 a.m.		14 (4)	5'	16000					19200	1st Flood	" "	2°	Piles bet. 49 & 52 St.
8:00 "		15 (4)	2'	39000				25	9200	Ebb	Calm	4°	" " " " "
8:30 "	9	16	10'	10000				17½	10000	"	"	1½°	" " " " "
9:00 "		17	20'	4500				17½	10600	"	"	4°	" " " " "
9:30 a.m.		18	2'	60000				30	8400	"	"	3½°	" " " " "
10:00 "		19	10'	12500				17½	10200	"	"	1½°	" " " " "
10:30 "		20	20'	6500				15	10600	"	"	1½°	" " " " "
11:00 "		21	2'	380000				25	9200	Flood	"	1½°	" " " " "
11:30 "		22	10'	280000				17½	10200	"	"	1½°	Affected by overflow from dredge
12:00 "		23	20'	150000				17½	10800	"	"	1½°	100' away
12:30 a.m.	24	24	2'	8200	acid	-		16	13000	Ebb	N.W. slight	1°	52 St B'g'n 500' off end Pier
1:00 "		25 (4)	10'	5500	"	+		15	13200	"	"		" " " " " "
1:30 "		26	20'	5000	"	-		15	13000	"	"		" " " " " "
2:00 "		27	2'	7500	"	+		17	12200	Ebb	"	1°	" " " " " "
2:30 "		28	10'	5000	"	+		15	12400	"	"		" " " " " "
3:00 "		29	20'	2500	"	+		16	12400	"	"		" " " " " "
3:30 p.m.		30	2'	7500	"	+		25	12000	Slow	"	1°	" " " " " "
4:00 "		31	10'	6000	"	+		23	12200	"	"		" " " " " "
4:30 "		32	20'	3000	"	+		17	12200	"	"		" " " " " "
5:00 "		33	2'	7500	"	+		17	12100	Flood	"	1°	" " " " " "
5:30 "		34	10'	5500	"	+		20	12200	"	"		" " " " " "
6:00 "		35	20'	3500	"	+		18	12600	"	"		" " " " " "
6:30 "		36	2'	2500	"	+		16	12200	Slow	"	1°	" " " " " "
7:00 "		37	10'	5500	"	-		17	12600	"	"		" " " " " "
7:30 a.m.		38	20'	4000	"	?		17	12200	"	"		" " " " " "
8:00 "		39	2'	7000	"	+		15	12500	Ebb	N.W. 4 miles	1°	" " " " " "
8:30 "		40	10'	5500	"	+		17	12500	"	"		" " " " " "
9:00 "		41	20'	2500	"	-		15	12400	"	"		" " " " " "
Total Summary	41												

(2)

Date and Hour	No. Sample taken	Serial Numbers	Depth of Sample	Bacteria per cc	Destructive Bacteria 24 Hrs		Turbidity	Color	Chlorine in per cent	Tide	Wind	Temp of Water	Location & Remarks
					Presumptive C.C.	B. Coli C.C.							
10:27 10:00		42	2'	5500	Acid ?			21	12400	Slack			at Bay 300' off End Pier.
		43	10'	5500	" ?			17	12300				
		44	20'	5500	" ?			18	12700				
10:00		45	2'	5500	" ?			18	12400	Flood		78°	" " "
		46	10'	4500	" ?			17	12000				
10:00		47	20'	5000	" ?			18	12000	Flood	N. breeze	78°	at Bay 300' S. End Pier
10:00	12	48 (47)	2'	25000	" ?	Acid ?	40	11960				78°	" " "
		49	10'	14000	" ?	" ?	30	11810				78°	" " "
10:00		50	20'	14000	" ?	" ?	30	12380				78°	" " "
		51	30'	10000	" ?	" ?	30	10970				78°	Way bet 43 & 52 St. Piers.
10:00		52 (49)	2'	13000	" ?	Acid ?	20	10970		Slack		78°	" " "
		53	10'	12000	" ?	" ?	30	12700				78°	" " "
10:00		54 (51)	2'	14000	" ?	" ?	30	12150		10' Ebb.		78°	52 St. End Pier
		55	10'	10000	" ?	" ?	30	12050				78°	" " "
10:00		56 (54)	2'	29000	" ?	" ?	30	12170		Ebb		78°	52 St. End Pier
		57	10'	14000	" ?	" ?	30	12290				78°	Piers bet 43 & 52 St.
10:00		58 (56)	2'	70000	" ?	" ?	35	12340		Ebb		78°	" " "
10:00		59	10'	47000	" ?	Acid ?	30	13670				78°	at Bay anchorage up N. Pier
10:00	15	60 (57)	1'	14000	" ?	" ?	30	12900		Flood	N. breeze	78°	" " "
10:00		61	25'	9000	" ?	" ?	30	14700				78°	" " "
10:00		62 (60)	1'	10000	" ?	" ?	30	12300		Flood	N.	78°	Way from where Edison Chimney
10:00		63	20'	4000	" ?	" ?	30	13790				78°	" " "
10:00		64 (62)	1'	7500	" ?	" ?	30	12730				78°	" " "
10:00		65	20'	5500	" ?	" ?	30	13790				78°	" " "
10:00		66 (64)	1'	8500	" ?	" ?	30	13400		Flood	N.	78°	Op. Edison Chimney (anchorage)
10:00		67	20'	4000	" ?	" ?	30	14340				78°	" " "
10:00		68 (66)	1'	9700	" ?	" ?	30	12310		Flood	N.	78°	Op. 53 St.
10:00		69	10'	7000	" ?	" ?	30	12600				78°	" " "
10:00		70 (68)	1'	27000	" ?	" ?	30	12100		Flood	N.	78°	Op. Governor's Bay buoy #14
10:00		71	20'	13700	" ?	" ?	30	12300				78°	" " "
10:00		72 (70)	1'	6750	" ?	" ?	30	12020		Flood	N.	78°	Piers bet 43 & 52 St.
10:00		73 (71)	1'	10000	" ?	" ?	30	12020		10' Ebb		78°	Op. Governor's Bay buoy #14
10:00		74	15'	13000	" ?	" ?	30	12730				78°	" " "
10:00	22	75 (73)	1'	6150	" ?	" ?	30	10470		Flood	N. breeze	78°	N. Pier 100' from Pier "a"
10:00		76	20'	5200	" ?	" ?	30	10350				78°	" " "
		77	40'	4050	" ?	" ?	30	10680				78°	" " "
		78	60'	3800	" ?	" ?	30	12430				78°	" " "
10:00		79 (76)	1'	5750	" ?	" ?	30	9450		Flood	N.	78°	" " "
		80	20'	5100	" ?	" ?	30	10730				78°	" " "
		81	40'	4750	" ?	" ?	30	12950				78°	" " "
		82	60'	2850	" ?	" ?	30	12230				78°	" " "

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Date & Hour	No Samples taken	Serial Numbers	Depth of sample	Bacteria per cc	Presumptive B. coli		Turbidity	Color	Chlorine P/p per ml	Tide	Wind	Temp of Water	Location & Remarks.
					16.6	16.6							
Feb 20 1:30 PM		83 SW	1'	4550			20	17	5400	Flood	N	72° E	N. River 1/4 way across.
		84	26'	3200			15	13	10920				
		85	90'	3400			100	30	13130				
		86	38'	3300									
" "		87 SW	1'	3900			20	13	3960	Flood	N	72°	" " midstream
		88	26'	3200			15	13	10920				
		89	44'	2400			30	12	11450	Flood	N	75°	" " 1/4 way across
2-20-		90 SW	1'	3900			15	13	10920				
		91	26'	2800			15	12	10920				
		92	30'	2100			20	15	13330	Flood	N	75°	" " 500' from Jersey Coal. RR
2-21-		93 SW	1'	4200			20	17	11300	Flood	N	75°	" " 100' " " " " "
		94	26'	4000			30	17	9790	Flood	N	75°	" " 100' - Pier " "
2-22-	20	95 SW	1'	7500			15	15	10620	ebb	N. 3/15 E	0°	" " 100' - Pier " "
		96	26'	4300			15	15	10370			56°	" " 100' - Pier " "
		97	40'	4300			20	10	10380			70°	" " 500' " " " "
2-23-		100	60'	3900			20	15	11490				" " 500' " " " "
		101 SW	1'	6150			20	15	10370	ebb	N		" " 500' " " " "
		102	26'	4200			15	13	10300				" " 500' " " " "
		103	40'	3900			20	10	10300				" " 500' " " " "
		104	38'	4400			20	10	10300				" " 500' " " " "
2-24-		105 SW	1'	3800			15	13	8100	ebb	N		" " 1/4 way across
		106	26'	3500			15	15	10300				" " 1/4 way across
		107	40'	3400			15	15	10310				" " 1/4 way across
		108	38'	2100			15	12	10320				" " 1/4 way across
2-25-		109 SW	1'	3500			20	20	8100	ebb	N		" " midstream
		110	26'	3200			20	17	10450				" " midstream
		111	40'	3200			15	12	11350				" " midstream
2-26-		112	40'	3200			20	20	8100	ebb	N		" " 1/4 way across
		113 SW	1'	3500			25	17	3960				" " 1/4 way across
		114	26'	3200			25	13	11450				" " 1/4 way across
2-27-		115	40'	3400			30	20	8780	ebb	N		" " 500' from N.J.C.R.R.
		116 SW	1'	1900			40	25	10100				bottom stirred up
		117	26'	3200			20	20	10390				" " 500' from N.J.C.R.R.
2-28-		118	40'	3400			20	20	8900	ebb	N		bottom stirred up
		119 SW	1'	3200			20	20	8900				" " 100' from N.J.C.R.R.
		120	26'	3200			20	20	8900				bottom stirred up
Feb 27 10 AM	20	121	40'	3200			40	20	10470	ebb	NW	75°	Pier at S. J. B'ghs
		122 SW	1'	6150			15	10	11300			70°	" " 100' from N.J.C.R.R.
		123	15'	3900			20	15	11390				" " 100' from N.J.C.R.R.

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Date & Hour	No. Samples taken	Serial Numbers	Depth of sample	Bacteria per cc	Presumptive		Turbidity	Color	Chlorine Per cc	Tide	Wind	Temp of Water	Location & Remarks.
					1cc	B. Coli 1cc							
Feb 21 Cont		124 (2)	1	5600			20	12	11650	Ebb	N.W.		Piles at St. St. B'njn
11:30 a.m.		125	15'	3300			20	12	11810				" " " " "
12 M.		126	1'	7100			20	12	11480				" " " " "
		127	15'	4350			20	19	11270				" " " " "
1 P.M.		128	1'	6450			20	12	11700				" " " " "
		129	15'	5500			18	12	11650				" " " " "
1:40 "		130 (2)	1'	125000			50	30	11130	1st Flood	N.W.	7/16	Gomanus Canal Ft. Court St.
		131	10'	115000			40	30	10630			1"	" " " " "
2 "		132	1'	160000			55	30	10200				" " " " "
		133	10'	100000			36	25	10800				" " " " "
2:30 "		134	1'	190000			40	30	10460				" " " " "
		135	10'	130000			30	25	10800				" " " " "
2:40 "		136	1'	16000			33	22	10300				" " " " "
		137	10'	105000			30	20	10970				" " " " "
3 "		138 (2)	1'	240000			30	30	9960	Flood	N.W.	3/16	" " 500' below Ham. Isd.
		139	15'	180000			40	30	11470			1"	" " " " "
3:30 "		140	1'	320000			200	50	9970				" " " " "
Feb 28		141	15'	155000			40	20	12820				" " " " "
8:10 a.m.	24	142 (2)	1	3900			30	10	11400	Ebb.	S.	0°	Midway bet Ellis & Liberty Isds.
		143	10'	6850			150	20	12150			1/16	bottom stirred up.
11:20 "		144 (2)	1'	3200			20	10	11480	"	S.	0°	200' S. of Liberty Isd.
		145	10'	2100			20	10	12640	"	S.	1/16	" " " " "
11:50 "		146 (2)	1'	1100			10	9	11980	"	S.	0°	500' S. Robbins Reef Light
		147	10'	950			10	8	12160				" " " " "
		148	30'	570			10	75	12880			1/16	" " " " "
12:30 P.M.		149 (2)	1'	2850			10	75	11650	"	S.	0°	2000' off St. George S.I.
		150	10'	2300			10	8	11980			1/16	" " " " "
		151	20'	1900			12	8	12320			1/16	" " " " "
		152	40'	1600			10	8	12490			1/16	" " " " "
1 "		153 (2)	1'	4450			12	10	11310	"	S.	0°	N.W. Van Muhl 500' off St. George
		154	20'	2100			18	11	11650	"	S.	1/16	" " " " "
1:15 "		155 (2)	1'	5100			18	11	11400	"	S.	0°	" " " 500' off Bx0 yards
		156	20'	2300			20	11	11480	"	S.	1/16	" " " " "
1:25 "		157 (2)	1'	5200			18	15	11800	"	S.	0°	" " " 500' off M. Brighton
		158	20'	3100			18	15	11480	"	S.	1/16	" " " " "
1:40 "		159 (2)	1'	5100			18	15	11140	"	S.	1/16	" " " E End Constable Pt.
		160	10'	3700			18	16	11000				" " " " "
		161	30'	2650			15	16	11440				" " " " "
2 "		162 (2)	1'	6050			10	15	11140	"	S.	1/16	" " " " "
		163	10'	4050			10	15	11140	"	S.	1/16	" " " " "
2:25 "		164 (2)	1'	2650			10	14	11580	"	S.	1/16	3000' N. Robbins Reef Light
		165	20'	1900			12	13	11980	"			opp Gomanus Bay.
Total Feb.	118												

Ex. 20. p. 4.

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Date & Hour	No. Samples Taken	Serial Numbers	Depth of Sample	Bacteria per C.C.	Lactose Bile 24 Hr's		Turbidity	Color	Chlorine Pm per ml	Tide	Wind	Temp. of Water	Location & Remarks
					Presumptive / C.C.	S. Coli. / C.C.							
MAR 2, 1907													
9 A.M.	3	166 (21)	1'	7000			40	15	11650	Flood	N.W.	21° C	E. River End of Pier 24 St.
		167	20'	3200			20	17	11810				
		168	30' 20'	2450			60	20	11810				
10 A.M.		169 (10)	1'	8500			40	20	11980	Flood	N.W.	21° C	" " 1/2 to " " "
		170	20'	7500			50	20	11980				
1:30 P.M.		171 (12)	1'	670			50	17	11140	Flood	N. 15 miles	1°	Ellis Isd. 3 Slip
		172	10'	500			200	15	11980				
2:30 P.M.		173 (12)	1'	300			20	15	11650	Flood	N. 15 miles	1°	Liberty Isd. E. dock
		174	10'	500			40	15	11980				
MAR 7	14	175 (12)	1'	1000	40% Quid +		20	15	11140	Flood	N.	1°	E. River midstream opp Pier 8
11:45 A.M.		176	20'	950	25 " +		30	15	11140				
12 M.		177 (12)	1'	1050	30 " +		30	15	11140	"	N.	1°	" " 500' off Jay St. B'hym
		178	20'	1050	10 " -		30	15	11650				
12:40 P.M.		179 (12)	1'	1300	40 " +		40	15	11480	"	N.	1°	" " midstream opp 48 St.
		180	20'	1300	10 " -		50	15	11300				
1:30 P.M.		181 (12)	1'	1550	10 " -		40	15	11470	"	N.	1°	" " " opp 38 St.
		182	20'	1200	10 " -		20	15	11470				
2:15 P.M.		183 (12)	1'	3200	25 " +		20	15	11980	"	N.	1°	" " 200' off 78 St.
		184	20'	1400	30 " +		20	15	11480				
3:00 P.M.		185 (12)	1'	1650	10 " -		15	15	11300	"	N.	1°	" " midstream opp 92 St.
		186	20'	1600	20 " +		30	15	11500				
4:00 P.M.		187 (12)	1'	1850	30 " +		30	15	11300	"	N.	1°	" " " opp 40 St. dock
		188	20'	1200	25 " +		10	15	11300				
MAR 12	12	189 (12)	1'	4350			25	10	8780	Ebb	E Mod	1°	Bayonne, S.S. Black Tom
10:15 A.M.		190	15'	3300			30	12	8950			1 1/2°	
10:30 A.M.		191 (12)	1'	4750			25	10	11140	"	E	1°	" " " Gr. Elks
		192	15'	4150			20	12	11480			1 1/2°	
10:45 A.M.		193 (12)	1'	3800			20	10	11650	"	E	1°	" " " opp 5 Shore
		194	15'	2950			20	10	11810			1 1/2°	
11:15 A.M.		195 (12)	1'	6450			20	12	11650	"	E	1°	" " " Outer end " "
		196	15'	4250			20	10	11810			1 1/2°	
12:30 P.M.		197 (12)	1'	4750			20	12	11310	"	E	1°	15th Van Wall M. and Coast Pt.
		198	5'	5100			25	15	10970			1 1/2°	
1:30 P.M.		199 (12)	1'	6350			25	15	13330	"	E	1°	Bayonne N. Robbins Reef opp A.R.R.
		200	20'	2650			25	12	12150			1 1/2°	
MAR 15	8	201 (12)	1'	6350			12	20	11310	Flood	N.W. Strong	1°	Bot. Ellis & Liberty 100 yds from Ellis
10:30 A.M.		202	8'	2600			30	15	11310			1 1/2°	
11:30 A.M.		203 (12)	1'	3850			30	12	11480	" NW	NW	1°	" " " 1/2 distance from "
		204	5'	7400			30	15	11980			1 1/2°	
12:45 P.M.		205 (12)	1'	6550			18	17	12150	1st Ebb	N.W.	1°	" " " 1/2 " " "
		206	5'	4750			35	17	11980			1 1/2°	

Ex. 20. P. 5.

Date & Hour	No. Samples taken	Serial Numbers	Depth of Sample	Bacteria per C.C.			Turbidity	Color	Chlorine. No. per ml	Tide	Wind	Temp of Water	Location & Remarks
					Presumptive	B. Coli							
					1 C.C.	1 C.C.							
Apr 15 Sat 1:45 P.M.	12	207	bot 6' 1'	4000			45	20	12660	Ebb	N.W. Strong	1°	Bot Ellis & Liberty 200 yds from Liku
1:50 "		208	5'	5800			60	12	12660			1 1/4°	
1:55 "		209	bot 7' 1'	5300			12	17	7430	Flood	E. 5 miles	2 1/2°	Off Jersey back of Ellis Id.
2:00 "		210	6'	4250			12	15	7960				
" "		211	(m) bot 8' 1'	5200			11	15	7600	"	E. "	2 1/2°	" " nearer Liberty Id
" "		212	6'	2450			13	12	7810				
2:10 A.M.		213	1'	3200			12	15	7600	"	S.W.	2 1/2°	" " 1/4 way from Ellis "
" "		214	bot 7 1/2' 6 1/2'	2650			20	17	7760				
2:15 "		215	1'	3300			15	12	7600	1/2 Ebb	"	2 1/2°	" " nearer " "
2:20 "		216	(6 1/2) 6'	3200			50	17	7600				
2:25 "		217	1'	1900			15	15	7600	Ebb	"	2 1/2°	" " N. off " "
2:30 "		218	(6 1/2) 6'	1150			20	17	8270				
Apr 15 Sat 2:45 A.M.	25	219	1'	1600			15	12	7600	Ebb	"	2 1/2°	Further off shore
" "		220	bot 8'	750			20	15	8100				
" "		221	1'	5200			20	17	2870	1/2 Ebb	N.W. 10 miles	1°	N. River 100' from Pier a.
" "		222	(53) 20'	3700			10	15	6320				
" "		223	40'	2650			20	15	6930				
" "		224	50'	2300			20	17	7600			2°	
" "		225	1'	4000			18	17	2370		"	1°	" " 500' " " "
" "		226	bot 55' 20'	2650			10	12	6070		"		
" "		227	40'	2450			13	15	6920				
" "		228	50'	1700			15	12	7430			2°	
2:55 "		229	1'	3200			20	17	5320		"	1°	" " 1/4 way across
" "		230	20'	3200			10	15	5370		"		
3:00 "	12	231	bot 55' 40'	2100			12	15	6320				
" "		232	50'	1900			15	15	7430			2°	
" "		233	1'	2850			20	17	2810		"	1°	" " midstream
" "		234	20'	2450			15	15	5230		"		
" "		235	bot 46' 40'	1900			30	12	3790				
" "		236	45'	1150			20	15	5960			2°	
" "		237	1'	3700			30	20	5040		"	1 1/2°	" " 3/4 way across
" "		238	20'	2650			30	17	4390		"		
" "		239	bot 45' 30'	1900			40	15	6920		"	2°	
3:25 "		240	1'	5100			30	17	2970		"	1 1/4°	" " 500' from N.J. C.R.R.
" "		241	20'	3400			40	17	4220		"		
" "		242	bot 25'	2650			40	15	5230		"	2°	
3:45 "	12	243	1'	4450			30	15	5640	End of tide	"	1 3/4°	" " 100' " " "
" "		244	20'	4250			30	19	4660		"		
3:50 "		245	bot 28'	6250			30	12	7930		"	1 3/4°	

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Date & Hour	No Samples taken	Serial Numbers	Depth of Sample	Bacteria per cc	Presumptive B. Coli		Turbidity	Color	Chlorine Ppt/100 ml	Tide	Wind	Temp of Water	Location & Remarks	
					100	100								
12:30 P.M.	8	246 (M)	Surf 1	10600				17	5830	Ebb.	S.E. 7 M.P.H.	3°	Off Jersey 1000' N. L.I.'s Isd.	
40 "		247	8	8500				13	5910	"	"	2 1/2°	" " " " "	
1:30 "		248 (U)	Surf 1	5000				17	4730	"	"	3°	" " " " 200' E. of above	
35 "		249	10	5000				20	5570	"	"	2 1/2°	" " " " "	
2:30 "		250 (U)	1	1700				17	3040	"	"	3°	" " " " " last	
55 "		251	Surf 17	9250		Surf stirred up		15	4220	"	"	2 1/2°	" " " " "	
2:15 "		252 (U)	1	1800				17	3040	Last P. Ebb.	"	"	3°	" " " " " last
40 "		253	Surf 20	4150		" " "		17	4560	"	"	2 1/2°	" " " " "	
1:40 P.M.		10	254 (U)	1	1050				Broken in Transit	5060	Last P. Ebb.	N. 20 M.P.H.	3 1/2°	Off Bayonne 100' N. R.R. Pier
1:45 "			255	Surf 10	1800		" " "	30	20	5060	"	"	3 1/2°	" " " " "
1:50 P.M.	256 (M)		Surf 1	950			50	20	4730	Ebb.	" " "	"	" " " " 1000' N. of last.	
45 "	257		7	1400			70	Broken in Transit	"	"	"	"	" " " " "	
1:40 "	258 (U)		Surf 1	1050			40	" " "	"	"	"	"	" " " " W. of Liberty Isd.	
45 "	259		6	2750			100	20	4890	"	"	"	" " " " "	
2:10 "	260 (U)		Surf 1	2950			30	17	4730	"	"	N.W. 10 M.P.H.	"	" " " " W. of L.I.'s Isd.
15 "	261		6	3500			70	20	4830	"	"	"	"	" " " " "
1:25 "	262 (U)		Surf 1	1800			70	17	4730	"	"	"	"	" " " " Commack Bay
30 "	263		7	2500			70	20	5400	"	"	"	"	" " " " "
1:45 P.M.	11	264	Surf 1	540			10	20	6080	Flood	N.W.	7°	" Jersey bet. Liberty Isd. & R.R. Pier	
55 "		265	8	300			15	15	6080	"	N.W.	7 1/2°	" " " " "	
50 "		266	Surf 1	600			20	15	6080	"	N.W.	"	" " " " "	
1:25 P.M.		267	1	1000			20	15	6240	"	"	7 1/2°	" " " " Off Bay View Cemetery	
30 "		268	10	1520			20	15	6220	"	"	7°	" " " " "	
1:50 "		269	Surf 1	900			10	17	6240	"	N.W.	7°	" " " " bet. last & Pt. R.R.	
35 "		270	10	720			40	17	6220	"	"	7 1/2°	" " " " "	
3:00 "		271	Surf 1	4240			15	15	6080	Ebb	N.W.	7°	" " " " N. of Pt. R.R. Dock	
45 "		272	10	400			10	12	7260	"	"	7 1/2°	" " " " "	
4:00 "		273	Surf 1	740			10	15	5910	"	N.W.	7°	" " " " end " " " "	
1:15 "	12	274	10	400			10	12	7090	"	"	7 1/2°	" " " " "	
1:45 P.M.		275	Surf 1	2970			15	12	3280	First Ebb	N.W. 20 M.P.H.	4 1/2°	Bayonne 100's. " " "	
35 "		276	8	2860			15	10	3620	"	"	"	" " " " "	
12:15 P.M.		277	1	1380			15	12	3450	Ebb.	N.W.	"	" " " " S. toward Constable Pt.	
30 "		278	Surf 7	2320			70	20	3450	"	"	"	" " " " "	
1:35 "		279	1	3080			20	12	3350	"	N. 10 M.P.H.	"	" " " " "	
40 "		280	Surf 7	3180			20	12	3120	"	"	"	"	" " " " "
1:35 "		281	1	3540			25	15	6320	"	N. S. "	"	"	" " " " off " " " to N.
40 "		282	Surf 7	6890			20	15	7430	"	"	"	"	" " " " "
1:15 "		283	1	8480			15	15	7260	Flood	N.	"	"	" " " " " to E.
20 "	284	Surf 8	3170			30	15	8440	"	"	"	"	" " " " "	
4:30 "	285	1	2220			25	12	7430	"	N.	"	"	" " " " " Killman Kill.	
1:35 "	2	286	Surf 15	3080			30	12	8440	"	"	"	"	" " " " "
1:45 P.M.		287	Surf 1	4530			15	10	6240	Ebb	N.W. 20 M.P.H.	5 1/2°	Anchorage off Governors Bay.	
1:50 "		288	17	2750			15	12	8440	"	"	"	"	" " " " "

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Date & Hour	No Samples Taken	Serial Numbers	Depth of Sample	Bacteria Per C.C.	Presumptive B. Coll.		Turbidity	Color	Chlorine (mg per ml)	Tide	Wind	Temp of water	Location & Remarks
					I.C.C.	I.C.G.							
10:00 AM	2	289	Surf 1'	60000			30	15	6580			12.1° C.	100' off 65 St. Sewer
5:05 PM		290	15'	13000			20	15	7930				B'ngh.
4:00 PM	77	291	Surf				2	11	8550				Hudson River
10:00 AM		292	10'				2	5	9450				
		293	20'				2	7	11800				500' off Battery
		294	30'				1	3	11600				
		295	40'				1	2	14400				A
		296	Bottom				2	4	14050				
		297	Surface				2	14	7600				
		298	20				3	15	12200				Midstream B
		299	Bottom				2	7	14150				
		300	Surf				2	5	8000				500' off Communipaw Coal Co.
		301	20 ± 60 fath				2	3	11700				dock Jersey City C
11:00 AM		302					7	2	7650				A
		303					6	2	8650				
		304					4	2	9850				500' off Battery
		305					2	2	12800				
		306					3	2	14000				
		307					4	2	14500				
		308					10	2	7150				B
		309					12	2	8400				Midstream
		310					4	2	14500				
		311					6	2	7600				C
12:00 PM		312					4	3	12500				
		313					10	2	7000				
		314					12	2	8500				
		315					8	2	10050				A
		316					6	2	10450				
		317					6	2	13700				
		318					2	3	14500				
		319					2	10	9050				B
		320					2	12	8950				
		321					3	10	13650				C
		322					2	8	7700				
		323					3	12	10700				
1:00 PM		324					3	12	8252				
		325					3	10	3000				
		326					2	6	10750				A
		327					2	4	12350				
		328					2	8	11550				
		329					2	2	14000				

Ex-28-P.9.

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Date & Hour	No. Samples Taken	Serial Numbers	Depth of Sample	Bacteria Per C.C.	Phosphorus		Turbidity	Color	Chlorine Ppt per ml	Tide	Wind	Temp. of Water	Location & Remarks
					Phosphorus I.C.C.	B. Cells I.C.C.							
April 2nd		330					2	10	4600				B
		331					2	9	9900				
		332					2	4	13350				
		333					2	13	7500				C
		334					2	8	9800				
	1:10 PM	335					2	12	6300				A
		336					3	10	7300				
		337					3	5	11800				
		338					2	5	13500				
		339					2	4	12270				
		340					2	4	12400				B
		341					2	12	4300				
		342					2	12	9650				
		343					2	9	13100				
		344					3	18	6900				
2:10 PM		345					3	14	10600				C
		346					2	10	7100				
		347					2	10	8400				A
		348					2	8	19000				
		349					3	8	11300				
		350					3	10	11700				
		351					3	8	14400				B
		352					3	0	6800				
		353					3	5	9000				
		354					3	0	11600				
3:10 PM		355					2	4	7050				C
		356					2	4	7000				
		357					3	10	8900				A
		358					3	15	9500				
		359					4	8	9600				
		360					2	2	11900				
		361					2	2	12700				B
		362					2	5	13650				
		363					2	15	8100				
		364					2	2	9800				
4:10 PM		365					2	2	15700				C
		366					2	8	8250				
		367					2	2	8150				A
		368					2	23	10250				
		369					2	20	10400				

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Date & Hour	No. Samples Taken	Serial Numbers	Depth of Sample	Bacteria Per C.C.	Presumptive		Turbidity	Color	Calorine Aer. per ml.	Tide	Wind	Temp. of water	Location & Remarks
					I.C.C.	B. Coli. I.C.C.							
11:00 AM		370	25'				3	19	10550				A
		371	30'				2	18	11850				
		372	40'				3	18	12600				
		373	Bottom				2	5	12650				B
		374					2	5	10350				
		375					2	5	10440				
		376					2	10	12900				C
		377					3	8	9800				
		378					3	18	11600				
		379					3	15	9800				A
11:00 AM		380					2	20	10200				
		381					2	6	11000				
		382					2	9	12500				B
		383					2	6	12600				
		384					2	4	13000				
		385					1	7	9550				C
		386					2	5	11500				
		387					2	5	12500				
		388					15	15	9900				A
		389					8	18	10800				
12:00 PM		390					2	10	9400				
		391					2	5	9550				B
		392					3	14	11150				
		393					2	3	10300				
		394					3	12	11800				C
		395					2	3	12150				
		396					2	4	8960				
		397					4	18	10850				A
		398					15	3	12450				
		399					2	3	9900				
1:00 PM		400					1	3	10250				B
		401					2	18	8350				
		402					2	5	8900				
		403					2	10	9950				C
		404					1	3	10600				
		405					2	4	11350				
		406					2	12	11300				A
		407					8	30	8900				
		408					3	12	9150				
		409					2	6	11950				

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Date & Hour	No Samples Taken	Serial Numbers	Depth of Sample	Bacteria Per C.C.			Turbidity	Color	Chlorine	Tide	Wind	Temp. of Water	Location & Remarks
					Presumptive I. C. C.	B. Coli I. C. C.							
Apr 23 Cont. 1:00 PM		410					8	10	8700				C
		411					4	10	9750				
		412					3	14	8000				
		413					2	8	8350				A
		414					8	15	8350				
		415					2	4	10850				
		416					2	3	10400				
		417					4	15	11350				
		418					2	18	7800				B
		419					2	15	9350				
3:00 PM		420					1	3	11900				C
		421					2	8	8050				
		422					3	10	9300				
		423					1	5	8250				
		424					2	10	8850				A
		425					2	8	9800				
		426					1	3	11750				
		427					3	5	11750				
		428					10	15	11850				
		429					8	14	8200				B
4:00 PM		430					8	15	9150				
		431					2	10	11500				C
		432					2	4	8850				
		433					2	5	10200				
		434					3	3	8400				
		435					3	5	9050				A
		436					3	10	10100				
		437					8	15	10700				
		438					2	10	10950				
		439					4	15	12650				
4:20 PM 4:40 PM		440					1	8	8450				B
		441					3	20	9500				
		442					15	20	12100				C
		443					4	10	8850				
		444					2	15	9700				
		445 (100)	1'				35	20	2800				Spuyten Duyvil E. End Pier Draw
		446	10'				40	20	2800				
		447	20'				40	20	13500				E. River Slip foot 6 St. Sewer
		448 (100)	Surf				40	25	3300		N.W. Strong		" " 100' off " " "
		449 (100)	"				10	20	10900				" " midstream " " "
4:50 PM 5:00 PM		450 (100)	"				5	12	14000				" " 100' off Bight Shore opp. " " "
		451 (100)	"				5	12	12900				

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Date & Hour	No. Samples taken	Serial Numbers	Depth of Sample	Bacteria per C.C.	Lactose Bile 48 Hr.		Turbidity	Color	Chlorine Pts. per ml.	Tide	Wind	Temp of Water	Location & Remarks.
					Presumptive 15 C.	B.Coli 15 C.							
May 28													
5 P.M.		452 (u)	Surf.				50	40	11800				Newton Cr under lower Draw bridge
5:15 "		453 (u)	"				45	40	11300				100' above "
June 6		454 (u)	"				Brewery wastes too high in sugar to determine cl. directly			Slack High	S.W. mod		100' at Meeker Av. Br
June 11/07		455 (u)	"						11000				100' at Greenpoint Ave
11:00 AM	42	456 (u)	"							Last of flood	S.E. mod	13 1/2° C	A 1000' from Jersey shore
		457	Surf. 10'	1150	40% acid +	25% acid +	15	12	10900				
		458	Surf. 10'	980	40 "	15 "	15	12	11900				
		459	Surf. 10'	1500	25 "	25 "	3	12	12200	Slack	1'	14°	B near Robbins Reef
		460	Surf. 10'	1420	40 "	25 "	3	10	13600				
		461	Surf. 20'	940	30 "	30 "	6	12	11500	Slack		13 1/2°	C Mid-Channel
		462	Surf. 20'	670	25 "	25 "	3	10	12800				
		463	Surf. 45'	460	25 "	15 "	3	10	14500				
		464	Surf. 1'	1400	40 "	40 "	6	10	11500	1st of Ebb		13 1/4°	D Anchorage
		465	Surf. 20'	820	25 "	25 "	20	10	13800				
		466	Surf. 1'	2000	50 "	40 "	18	20	11400	Ebb		13 3/4°	E Bay Ridge Channel
		467	Surf. 20'	1340	40 "	35 "	5	15	11800				
		468	Surf. 35'	680	40 "	25 "	20	10	13600				
		469	Surf. 12'	9240	70 "	50 "	14	15	11300			14°	F 100' from Bklyn shore
		470	Surf. 10'	2400	60 "	40 "	18	12	11600				
		471	Surf. 1'	1040	25 "	25 "	18	10	10900			15°	A
		472	Surf. 10'	710	25 "	15 "	12	10	11500				
		473	Surf. 1'	1200	40 "	20 "	6	12	11200			14 1/2°	B
		474	Surf. 10'	880	25 "	25 "	10	10	11200				
		475	Surf. 20'	2800	40 "	40 "	12	12	9600			14 1/2°	C
		476	Surf. 45'	2000	40 "	30 "	12	11	11800				
		477	Surf. 1'	1060	30 "	30 "	12	10	14200				
		478	Surf. 1'	1060	30 "	30 "	12	10	14200			14°	D
		479	Surf. 20'	4240	40 "	25 "	15	12	10500				
		480	Surf. 20'	2540	25 "	40 "	35	10	11400				
		481	Surf. 20'	4800	40 "	60 "	18	12	11600			13 3/4°	E
		482	Surf. 30'	2750	40 "	60 "	20	12	11800				
		483	Surf. 35'	2000	40 "	25 "	20	13	12500				
		484	Surf. 1'	5200	60 "	70 "	18	11	11200	Slack		14°	F
		485	Surf. 10'	4800	40 "	40 "	25	15	11600				
		486	Surf. 12'	4800	40 "	40 "	22	15	10100	Flood		14 1/2°	A
		487	Surf. 1'	1200	25 "	25 "	20	12	11800				
		488	Surf. 10'	900	30 "	0 neut 0	20	12	11800				
		489	Surf. 1'	1040	25 "	15 acid ?	23	15	10200			14 1/2°	B
		490	Surf. 10'	720	25 "	0 neut 0	8	14	10600				
		491	Surf. 1'	1600	50 "	25 acid +	18	15	8500			14 1/2°	C
		492	Surf. 20'	1020	50 "	20 "	3	14	11000				
		493	Surf. 45'	540	40 "	0 neut 0	3	10	12500				
		494	Surf. 1'	1200	60 "	25 acid +	3	15	9300			14°	D
		495	Surf. 20'	840	60 "	15 "	5	12	11300				

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Date & Hour	No Samples taken	Serial Numbers	Depth of Sample	Bacteria per CC	Presumptive B. coli		Turbidity	Color	Chlorine Mls per mil	Tide	Wind	Temp of Water	Location & Remarks
					16 C.	18 C.							
Jan. Cont.		493 (206)	1	3080	70% acid	40% acid	3	15	10800	Flood	S.E. mod.	13 $\frac{1}{2}$ °	E Bay Ridge Channel
		494	20	1600	10 "	25 "	2	11	12000				
		495	35	920	50 "	15 "	7	10	11800				
		496	1	3600	70 "	25 "	7	11	11400	Flood		14°	F 100' from B'klyn shore
Apr 19/07 6:40 a.m.	30	497	10	2400	40 "	25 "	5	13	8400				
		498 (212)	1	6050	60 "	40 "	3	18	11700	1 $\frac{1}{2}$ hr after Flood	S.W. mild	16 $\frac{1}{2}$ °	E River
		499	20	5300	25 "	30 "	3	10	12100			16°	100' off Pier 10 N.Y.
		500	40	4240	40 "	25 "	4	16	11400			16°	
		501 (211)	1	7400	50 "	40 "	4	10	10800	Flood		16 $\frac{1}{2}$ °	500' " " "
		502	20	3180	50 "	25 "	4	10	10800			16°	
		503	50	2860	30 "	20 "	3	10	11700			16°	
1:20 "		504 (212)	1	3900	40 "	25 "	3	10	9300			16 $\frac{1}{2}$ °	Midstream
		505	20	2320	25 "	25 "	3	10	11600			16°	
		506	36	2220	40 "	0 neut.	3	10	13100			16°	
2:4 "		507 (212)	1	4770	60 "	30 acid	4	11	9300			16 $\frac{1}{2}$ °	500' off Pier 10 B'klyn
		508	20	3280	60 "	25 "	4	11	11500			16°	
		509	45	2320	25 "	0 neut.	4	10	12900			16°	
3:30 P.M.		510 (244)	1	8480	70 "	40 acid	3	11	8100			16 $\frac{1}{2}$ °	100' " " "
		511	20	7400	40 "	40 "	3	12	10000			16°	
		512	45	4350	40 "	25 "	4	10	11500			16°	
4:45 "		513 (212)	1	4770	60 "	30 "	3	10	10300	Est. M. Flood		16 $\frac{1}{2}$ °	100' " " " N.Y.
		514	20	4240	40 "	40 "	3	10	13100			16°	
		515	40	2430	40 "	30 "	4	10	11900			16°	
5:15 "		516 (212)	1	4240	50 "	40 "	3	10	9300	Flood		16 $\frac{1}{2}$ °	500' " " "
		517	20	3180	40 "	25 "	4	10	10900			16°	
6:45 "		518	50	2120	25 "	0 neut.	7	10	13900			16°	
		519 (212)	1	5830	40 "	25 acid	4	10	9500			16 $\frac{1}{2}$ °	Midstream
		520	20	3180	40 "	0 neut.	Broken at transit.					16°	
7:30 "		521	35	1590	50 "	0 "	8	10	13100			16°	
		522 (212)	1	3600	50 "	25 acid	3	10	10200			16 $\frac{1}{2}$ °	500' off Pier 10 B'klyn
		523	20	2120	30 "	25 "	3	10	11000			16°	
8:45 "		524	45	1480	25 "	0 neut.	3	10	12600			16°	
		525 (244)	1	6360	70 "	40 acid	3	10	11300	East of Flood nearly black		16 $\frac{1}{2}$ °	100' " " "
		526	20	4240	60 "	30 "	3	10	11300			16°	
9:27 "		527	45	3100	25 "	20 "	3	10	12800			16°	
10:00 "	10	528 (244)	1	1120	40 "	25 "	18	20	5700	2 $\frac{1}{2}$ hr. Flood	N.W.	14°	Spuyten Duyvil Cr. Draw
		529	15	1000	25 "	0 neut.	20	20	5700	found 100 yds			
12:00 "		530 (244)	1	8120	40 "	25 acid	15	20	6200			19°	N.Y. midstream 1000 yds from Kingsbridge
		531	15	1900	40 "	15 "	18	20	5700	Est.			Midson
1:40 "		532 (247)	1	4240	50 "	25 "	18	22	6200			19°	" " Kingsbridge
		533	15	3180	40 "	0 neut.	18	22	6600	Est.			

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Date & Hour	No. Sample taken	Serial Numbers	Depth of Sample	Bacteria per c.c.	Dextrose Broth. 24 hrs		Turbidity	Color	Chlorine Pp. per ml	Tide	Wind	Temp. of Water	Location & Remarks
					Presumptive L.C.	B. Coli L.C.							
Jan 27 Cont													
3:30 P.M.		534 (111)	bot. 20' 1	2860	30% acid +	40 acid +	8	18	8700	Slack	N.W.	19°	Marion River midstream off Daemen St.
"		535	15	2120	25 " +	30 " +	8	15	11800	"	"	19°	" midstream
"		536 (112)	1	4360	70 " +	40 " +	8	18	12300	"	"	"	" right bridge
"		537	15	4240	50 " +	40 " +	8	12	12300	"	"	"	"
Jan 28 1907	5.5	538	1	7300			2	14	11900	Slack	S. 4 miles	24 1/2°	Hudson River
"		539	20	6000			2	14	13100			24°	100' off Pier "a"
"		540	bot. 40	4000			18	12	13500			20 3/4°	
"		541	1	6900			3	14	12100				500' "
"		542	20	5700			2	12	13100				
"		543	40	4800			2	12	13900				
"		544	bot. 46	3200			2	12	14300				
"		545	1	6400			3	16	12800				1/4 way across
"		546	20	5200			3	14	12500				
"		547	40	3800			2	13	13300				
"		548	bot. 50	2300			2	14	14000				
"		549	1	5400			2	15	12500				
"		550	20	3500			2	14	13200				
"		551	bot. 40	2800			3	14	14000				
"		552	1	5900			3	14	12800				3/4 " "
"		553	20	3700			4	15	13600				
"		554	bot. 30	2900			4	14	14300				
"		555	1	6200			3	14	12500				500' off Jersey
"		556	20	5100			3	15	13000				
"		557	bot. 30	3500			4	14	13700				
"		558	1	6600			2	14	12300				100' "
"		559	bot. 20	5200			4	15	12300				
"		560	1	5900			2	11	14400	Flood	S. 3 miles	24 1/2°	Hudson River
"		561	20	5200			2	12	14600			21°	100' off Pier "a" N.E.
"		562	bot. 40	3500			2	10	12700			20°	
"		563	1	5300			2	11	15000				300' "
"		564	20	4400			3	10	15000				
"		565	40	3300			4	10	15100				
"		566	bot. 46	2500			3	9	13500				
"		567	1	5100			3	12	14500				1/4 way across
"		568	20	5200			4	12	15500				
"		569	40	3500			2	8	14600				
"		570	bot. 50	2700			2	10	16000				
"		571	1	4000			2	14	14200				1/4 " "
"		572	20	3300			2	12	15100				
"		573	bot. 40	2900			3	8	16700				

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Date & Hour	No. Samples taken	Serial Numbers	Depth of Sample	Bacteria per C.C.	Lactase Bile 48 Hrs.		Turbidity	Color	Chlorine $\frac{15}{100}$ per ml.	Tide	Wind	Temp. of Water	Location & Remarks
					Presumptive B. Coli 16 C.	1 C.C.							
2:30 PM		574	1'	4100			3	12	14200	Flood	S. 3 miles		3/4 way across.
		575	20'	3400			3	12	14800				
		576	bot. 30'	2300			2	12	15100				
2:30 "		577	1'	3900			3	12	14200				500' from Jersey
		578	20'	3500			3	12	15300				
		579	bot. 30'	2500			2	12	14000				100' " "
2:42 "		580	1'	4900			3	13	15000				
		581	bot. 20'	4400			3	11	15200	Ebb.	S. mid	24°	Hudson River
2:45 "		582	1'	6600			4	12	14000			20 1/2°	100' from Pier "a"
		583	20'	6200			3	9	14800				
		584	bot. 40'	3400			3	9	16200				500' " " "
2:52 "		585	1'	5400			3	12	15000				
		586	20'	3100			4	12	15700				
		587	40'	3700			3	11	15400				
		588	bot. 46'	2700			3	9	15400				1/4 way across
4:05 "		589	1'	4200			4	12	14400				
		590	20'	4700			2	11	14900				
		591	40'	3700			2	16	14900				
		592	bot. 50'	2300			3	14	14300				5/8 " "
4:10 "		593	1'	3900			3	12	14300				
		594	20'	3100			2	12	14100				
		595	bot. 40'	2100			3	10	15300				4/8 " "
4:30 "		596	1'	3300			2	12	14500				
		597	20'	3000			3	12	14300				
		598	bot. 30'	2800			3	13	15400				500' from Jersey
4:40 "		599	1'	4400			3	13	14600				
		600	20'	4000			3	12	14400				
		601	bot. 30'	3100			4	14	14900				100' " "
4:50 "		602	1'	3600			4	14	14200				
4:50 "		603	bot. 20'	3900			4	13	14700	Ebb.	S.W. mid	22°	E. River 1/2 bot. Gov. Bldg. Battery
4:55 "	21	604 (1st)	1'	4400	40% acid	25 acid	2	10	13400				mid. Battery Milt. Ch. up 38 ft. Bldg.
5:10 AM		605 (2nd)	1'	5900	40 " "	30 " "	2	9	13600				
5:20 "		606	bot. 40'	2300	30 " "	25 " "	2	8	13400				Foot Commodore. 100' out.
5:30 "		607 (1st)	bot. 22'	3100	30 " "	40 " "	3	13	12900				
		608	20'	3100	30 " "	40 " "	3	8	13600				
5:45 "		609 (2nd)	1'	4000	40 " "	25 " "	4	9	13400				East Anchorage of buoy 25000
		610	bot. 25'	2800	25 " "	10 " "	3	10	13000				
5:55 PM		611 (1st)	1'	1300	70 " "	40 " "	3	9	13200				Gowanus Bay Center
6:00 "		612 (2nd)	1'	1400	80 " "	40 " "	2	19	13200				" Canal below Ham 12 St.
6:15 "		613 (3rd)	1'	3400	40 " "	30 " "	3	11	13300				Anchorage of Gowanus Bay 1 mile out.
		614	bot. 12'	4400	50 " "	25 " "	3	13	13700				
		615 (2nd)	1'	8900	50 " "	40 " "	2	11	14200				200' off 53 St. Bldg.
6:25 "		616	bot. 35'	4500	35 " "	25 " "	2	14	13800				

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Date & Hour	No. Sample taken	Serial Number	Depth of Sample	Bacteria per c.c.	Lactose Bro 48 hrs		Turbidity	Color	Chlorine M per ml	Tide	Wind	Temp. of water.	Location & Remarks
					Presumptive 16.6.	B. Coli 16.6.							
6:15 AM	1	617100	1	8500	405 acid	25 acid	3	12	13500			22°	200' off Pier 10 B'n.
6:18		618	40	5200	45 "	25 "	7	15	12500				200' off Pier 10 B'n.
6:19 PM		619	40	4000	35 "	20 "	4	15	13500				200' off Pier 10 B'n.
6:20		620	40	4100	30 "	25 "	4	9	13700				200' off Pier 10 B'n.
6:21 PM		621	40	1200	25 "	0 acid	4	8	13700	Flood			200' off Pier 10 B'n.
6:22		622	40	800	30 "	" "	4	9	14000				200' off Pier 10 B'n.
6:23 PM		623	40	300	20 "	" "	3	11	13400				200' off Pier 10 B'n.
6:24 PM		624	40	300	0 acid	" "	4	7	14000				200' off Pier 10 B'n.
6:25		625	1	8100	60 acid	40 acid	3	14	14000	Rise	SE wind	22½°	200' off Pier 10 B'n.
6:26		626	20	7000	30 "	40 "	4	8	13200				200' off Pier 10 B'n.
6:27		627	40	4500	20 "	25 "	4	9	13100				200' off Pier 10 B'n.
6:28		628	40	4400	45 "	25 "	4	9	13300				200' off Pier 10 B'n.
6:29		629	20	5400	50 "	30 "	4	9	13000				200' off Pier 10 B'n.
6:30		630	40	3600	45 "	25 "	4	9	13300				200' off Pier 10 B'n.
6:31		631	1	9200	30 "	25 "	3	10	12900				200' off Pier 10 B'n.
6:32		632	20	3200	30 "	25 "	3	10	12800				200' off Pier 10 B'n.
6:33		633	40	2000	45 "	0 acid	3	12	12700				200' off Pier 10 B'n.
6:34		634	1	6700	60 "	30 acid	3	12	13500				200' off Pier 10 B'n.
6:35		635	20	6100	30 "	40 "	4	12	13500				200' off Pier 10 B'n.
6:36		636	40	3300	40 "	25 "	4	9	12800				200' off Pier 10 B'n.
6:37		637	1	3400	20 "	40 "	4	8	13000				200' off Pier 10 B'n.
6:38		638	40	3200	30 "	30 "	2	9	13300				200' off Pier 10 B'n.
6:39		639	40	4500	45 "	30 "	3	9	13300				200' off Pier 10 B'n.
6:40		640	1	6400	60 "	" "	3	10	13300	Slack	SE wind		200' off Pier 10 B'n.
6:41		641	20	6500	40 "	" "	3	9	12800				200' off Pier 10 B'n.
6:42		642	40	3800	40 "	" "	3	12	13100				200' off Pier 10 B'n.
6:43		643	1	5500	35 "	" "	3	11	12700				200' off Pier 10 B'n.
6:44		644	20	4400	30 "	" "	3	10	12500				200' off Pier 10 B'n.
6:45		645	40	3100	20 "	" "	3	9	12000				200' off Pier 10 B'n.
6:46		646	1	4900	30 "	" "	3	10	14000				200' off Pier 10 B'n.
6:47		647	20	4000	30 "	" "	3	10	13200				200' off Pier 10 B'n.
6:48		648	40	2400	45 "	" "	3	10	13500				200' off Pier 10 B'n.
6:49		649	1	4500	30 "	" "	3	10	12400				200' off Pier 10 B'n.
6:50		650	20	3700	30 "	" "	4	20	12600				200' off Pier 10 B'n.
6:51		651	40	3500	25 "	" "	4	20	12800				200' off Pier 10 B'n.
6:52		652	1	3200	40 "	" "	4	10	14200				200' off Pier 10 B'n.
6:53		653	20	3800	30 "	" "	4	9	13400				200' off Pier 10 B'n.
6:54		654	40	3400	30 "	" "	3	9	13500	Flood	SE wind	22½°	200' off Pier 10 B'n.
6:55		655	1	5300	" "	" "	2	10	13800				200' off Pier 10 B'n.
6:56		656	20	4800	" "	" "	2	9	13500				200' off Pier 10 B'n.
6:57		657	40	3000	" "	" "	4	10	11800				200' off Pier 10 B'n.

K. 40-207.

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Date & Hour	No. Samples taken	Serial Numbers	Depth of sample	Bacteria per C.C.	Lactose Bile 48 hrs		Turbidity	Color	Chlorine per cent	Tide	Wind	Temp. of Water	Location Remarks
					Presumptive	B. coli							
					I.C.C.	I.C.C.							
Sept 4 Cont.													
3:30 P.M.	28	699	bot. 24	15000	60 acid +	30 acid +	3	18	14300	Flood			Gowanus Bay Ft 20 st.
4:15 A.M.		700	20	8200	35 " "	10 " 0	5	30	13900	Ebb	5.	23°	Mill Van Noll
		701	1	9100	60 " "	40% acid +	1	12	14300				50' off N. Brighton S.I.
		702	10	7400	40 " "	30 " "	1	12	14000				
		703	bot. 15	5700	40 " "	25 " "	2	11	13900				
		704	1	8300	50 " "	35 " "	1	9	14000				1/4 way across
		705	bot. 24	5600	50 " "	30 " "	1	13	14000				
		706	20	5300	40 " "	25 " "	2	9	14000				1/2 " "
		707	1	7400	60 " "	40 " "	2	11	14000				
		708	bot. 24	4200	40 " "	35 " "	2	9	14000				
		709	20	3600	25 " "	20 " "	2	14	14300				
		710	1	5400	50 " "	50 " "	1	10	14300				3/4 " "
		711	bot. 21	5100	40 " "	40 " "	1	8	14300				
		712	20	3200	40 " "	30 " "	1	9	14300				
		713	1	4900	35 " "	35 " "	2	12	14600			22 1/2°	50' from Constable St.
		714	bot. 5	4300	50 " "	25 " "	2	15	14200				Chimney Oxford Copper Co.
		715	1	7000	60 " "	50 " "	2	20	14200	Flood	5		50' off N. Brighton S.I.
		716	10	5600	50 " "	20 " "	2	25	13800				
		717	bot. 15	4400	25 " "	30 " "	3	17	14200				1/4 way across
		718	1	7800	45 " "	30 " "	2	11	13700				
		719	bot. 24	6600	40 " "	25 " 0	1	14	13800				
		720	20	4100	40 " "	10 " 0	2	10	13500				1/2 " "
		721	1	5400	35 " "	45 " "	2	13	13000				
		722	bot. 24	3800	30 " "	25 " "	2	12	13000				
		723	20	2700	30 " "	0 neut. 0	3	10	13400				
		724	1	4200	50 " "	35 acid +	4	13	13400				3/4 " "
		725	bot. 21	3200	35 " "	25 " "	1	10	14000				
		726	20	2700	25 " "	10 " 0	1	11	14000				50' from Constable Pt.
		727	1	4300	55 " "	35 " "	2	13	13500				
		728	bot. 5	3800	40 " "	0 neut. 0	1	12	13800				
		729	1	8200	60 " "	40 acid +	1	14	11700	Flood - Harlem		23 1/2°	Harlem Riv. at 3 Ar Bridge
		730	bot. 14	5700	40 " "	30 " "	1	11	12100				50' from S Shore
		731	1	7100	50 " "	40 " "	2	10	13200				Midstream
		732	bot. 24	5300	35 " "	25 " "	1	10	13400				
		733	20	4400	40 " "	25 " "	1	12	13400				50' from N Shore
		734	1	7400	50 " "	35 " "	2	20	11700				
		735	bot. 25	7800	40 " "	30 " "	1	11	12500				
		736	20	4700	35 " "	25 " "	1	12	12500				
		737	bot. 11	6900	40 " "	25 " "	1	9	14000	Ebb - E River			50' " S "
		738	10	4900	40 " "	20 " "	1	9	14600				

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Date & Hour	No Sample taken	Serial Numbers	Depth of Samples	Bacteria per c.c.	Lactose Bile 48h		Turbidity	Color	Chlorine p.p.s per mil	Tide	Wind	Temp of Water	Location & Remarks
					Presumptive 100	B. Coli 100							
Sept 6 Cont		739	1	6100	50% acid +	30 acid +	1	9	14600	Ebb			Harlem River cont
12.10 P.M.		740	bot 21 10	4800	25 " +	25 " +	2	12	14300	→ E. River			Midstream
		741	20	3700	35 " +	15 " 0	2	12	14300				
		742	1	5700	45 " +	25 " +	18	-	13400				50' from N. shore
2.25 P.M.		743	bot 22 10	4900	60 " +	30 " +	1	14	14100				
		744	20	3900	35 " +	0 neut 0	2	23	14600				
Sept 10	18	745	1	2200	25 " +	25 acid +	2	7	15100	Flood		22°	Narrows
11 A.M.		746	bot 10	1800	30 " +	25 " +	1	7	15900				E. Shore 300' from Ft. Hamilton
		747	1	1600	40 " +	30 " +	1	6	15400				Midstream
		748	20	1400	25 " +	0 neut 0	2	6	15600				
		749	40	380	15 " 0	0 " 0	2	7	15900				
		750	bot 85	180	0 neut 0	0 " 0	2	7	15900				
		751	1	2500	40 acid +	35 acid +	1	7	14200				N. shore 100' from Ft. Wadsworth
11.45 "		752	30	1900	30 " +	25 " +	1	5	15900				
		753	bot 60	580	0 neut 0	0 neut 0	1	7	15700				300' off Ft. Hamilton
		754	1	4300	50 acid +	30 acid +	3	10	14700	Ebb			
2.30 P.M.		755	bot 10	3500	50 " +	25 " +	6	10	15700				
		756	1	3900	40 " +	25 " +	3	8	14800				Midstream
		757	20	3000	35 " +	40 " +	3	10	14600				
2.45 "		758	40	840	25 " +	0 neut 0	4	11	14900				
		759	bot 85	290	0 neut 0	0 " 0	2	9	14600				
		760	1	5100	50 acid +	35 acid +	2	11	14800				100' off Ft. Wadsworth
5 "		761	30	3700	40 " +	25 " +	3	8	14600				
Sept 11	13	762	bot 60	1100	25 " +	0 neut 1	2	8	14900				
1 P.M.		763	1	6200	40 " +	25 acid +	25	8	12700	1st Ebb		22 1/2°	Newtown Cr.
		764	bot 15	4000	50 " +	30 " +	4	65	12700				Johnson & Morgan Ave
1.15 "		765	1	5900	50 " +	25 " +	15	250	11700				Met Ave Bridge
		766	bot 16 15	4800	45 " +	20 " +	15	170	12400				Maspeth Ave. "
1.45 "		767	1	4900	60 " +	30 " +	2	30	12400				
		768	bot 20	3900	40 " +	30 " +	15	170	12600				Necker Ave. "
		769	1	4300	35 " +	25 " +	3	25	12900				
2 "		770	bot 19	3200	30 " +	10 " 0	3	25	12700				Greenpoint Ave "
		771	1	6000	40 " +	30 " +	3	18	13200				
2.10 "		772	bot 17	4000	25 " +	0 neut 0	3	22	13200				
2.45 "		773	1	5900	50 " +	30 acid +	3	18	13500				Vernon Ave. "
		774	bot 18	3600	50 " +	25 " +	2	18	12700				below " " "
3 P.M.		775	1	2400	25 " +	0 neut 0	2	22	11300				Harlem River.
Sept 12	18	776	1	5300	50 " +	35 acid +	2	14	11100	Flood	N.W. mod.	22°	Pier N.Y. in Randall's Island
4.20 A.M.		777	bot 5	4700	40 " +	25 " +	2	18	9000	→ Hudson			Midstream midway
		778	1	8300	50 " +	30 " +	2	13	8800				bet 2 & 3 Ave. bridges.
4.40 "		779	bot 22 10	7400	25 " +	30 " +	2	19	9000				
		780	20	4300	35 " +	25 " +	2						

Ex. 20-P. 19

(2)

Date & Hour	No. Samples taken	Serial Numbers	Depth of Sample	Bacteria per C.C.	Presumptive & Coli		Turbidity	Color	Chlorine Ppt per ml	Tide	Wind	Temp. of Water	Location & Remarks
					per C.C.	per C.C.							
Sept 12 Cont.													Harlem River (Cont.)
		761	1'	9200	40% acid +	40% acid +	1	13	7200	Flood	N.W. mod.	22°	Midstream 1/2 bet. 4 th St. & Mad. Ave. bridge
		762	bet 22' 10'	6200	50 " +	25 " +	4	18	7200				
		763	20	5600	25 " +	30 " +	2	14	7500				
		764	1	6000	60 " +	40 " +	2	17	6500				1/2 bet. 145 th St. & NYC Bridge
		765	bet 21' 10'	5900	50 " +	40 " +	3	17	6500				
		764	20	4200	30 " +	0 neut. 0	2	17	6300				W. Shore 1/2 bet. Pulham R.R. & High Bridge
		767	bet 14' 1	3400	45 " +	25 acid +	3	17	6300				
		768	10	3700	30 " +	20 " +	3	17	6300				
		769	bet 17' 1	4400	25 " +	25 " +	3	22	6700				Midstream Ditmars St
		790	10	2700	25 " +	0 neut. 0	3	18	6700				N. Shore at Kingsbridge
		791	1	3900	25 " +	35 acid +	3	22	7300				
		792	10	2900	30 " +	15 " 0	3	19	7500				
		793	bet 19	2100	15 neut. 0	0 neut. 0	2	17	7500	Ebb.		22°	N. River Ft. Gansevoort
		794	1	6500	90 acid +	50 acid +	5	17	9000	N.W. 2:45 P.M.			inner end.
		795	bet 1	6400	70 " +	30 " +	5	17	9000	Ebb.			Gansevoort St.
		796	1	9500	80 " +	60 " +	4	15	9500	Flood			
		797	bet 12	7400	80 " +	45 " +	6	25	12000	Flood			E. River Ft. Oliver St.
		798	1	19000	80 " +	50 " +	10	15	9000	Ebb.			inner end.
		799	bet 5	13000	60 " +	60 " +	15	15	9500	Ebb.			
		800	1	17000	80 " +	60 " +	12	17	11000	Flood			
		801	bet 3	9500	70 " +	35 " +	10	17	12500	Flood			
		802	1	1080	40 " +	15 " 0	2	9	11600	Flood	N.W. 50 miles	22 1/2	Newark Bay
		803	10	1400	40 " +	25 " +	2	10	11900				bet. Shooter's Isd. & Light
		804	bet 30	700	25 " +	0 neut. 0	3	15	9800				Bell Buoy off Centerville
		805	1	6300	50 " +	25 acid +	3	15	10100				
		806	bet 22' 10'	5300	60 " +	30 " +	4	11	10500				
		807	20	4800	45 " +	25 " +	4	17	8500				By Buoy #4
		808	1	15000	70 " +	40 " +	7	22	8500				
		809	10	11000	60 " +	40 " +	4	18	6500				
		810	bet 12	13000	60 " +	30 " +	8	25	3900				" " #11
		811	1	38000	80 " +	50 " +	9	20	4400				
		812	10	44000	70 " +	60 " +	9	20	4100				
		813	bet 15	36000	80 " +	45 " +	25	27	540				Mouth Passaic River
		814	1	57000	80 " +	70 " +	30	27	640	Ebb.	N.W. 40 miles		
		815	bet 8	57000	80 " +	70 " +	25	27	790				
		816	1	69000	80 " +	60 " +	125	23	1480				
		817	bet 8	59000	70 " +	70 " +	40	22	2820				Newark Bay by
		818	1	52000	80 " +	70 " +	40	24	4600				bet. buoy #11
		819	10	38000	80 " +	60 " +	8	24	5800				
		820	bet 15	25000	70 " +	50 " +	8	26	5800				Croton Water

(21)

Date & Hour	No. Samples taken	Serial Number	Depth of Sample	Bacteria per C.C.	Presumptive L.C.		Turbidity	Color	Chlorine Hypermet	Tide	Wind	Temp of Water	Location & Remarks
					60 Acid	60 Acid							
Sept 26 Cont		821	1'	26000	60 Acid +	60 Acid +	12	29	5900	Ebb.	N.W. 40 mph	28°	Newark Bay by Buoy #4
2:15 P.M.		822	10'	24000	45 " +	65 " +	22	30	6900				
		823	bot. 12'	23000	50 " +	45 " +	8	20	7500				" " Bull Bay off Centerville
2:40 P.M.		824	1'	19000	40 " +	40 " +	12	22	7700				
		825	bot. 24'	21000	50 " +	25 " +	20	20	7900				" " bot. Sheeters S.W. & Light
		826	20'	13000	35 " +	25 " +	8	19	10200				
3:00 P.M.	28	827	1'	5300	30 " +	30 " +	9	19	10400				
		828	10'	2600	30 " +	25 " +	9	16	10600				
Sept 26		829	bot. 20'	4800	40 " +	40 " +	2	22	3000	Flood	N.W. 6 mph	26°	Hudson River 100' off Spuyten Duyvil
10:30 A.M.		830	bot. 11'	640	40 " +	25 " +	18	22	3300				
		831	10'	760	40 " +	25 " +	7	22	3300				
		832	1'	590	50 " +	30 " +	8	22	3300				by way across
10:45 A.M.		833	10'	450	40 " +	20 " +	12	20	3800				
		834	20'	510	45 " +	10 " +	35	20	4300				
		835	bot. 40'	740	30 " +	25 " +	15	22	3300				
		836	1'	250	25 " +	0 Neut. 0	20	22	3400				
11:05 A.M.		837	bot. 24'	150	0 Neut. 0	0 " +	30	25	3800				1/2 " "
		838	20'	340	30 Acid +	15 Acid 0	15	22	3400				3/4 " "
		839	1'	220	40 " +	0 Neut. 0	25	20	3400				
11:20 A.M.		840	bot. 22'	260	25 " +	25 Acid +	50	22	3000				
		841	20'	540	35 " +	30 " +	20	22	3400				
11:40 A.M.		842	bot. 13'	280	30 " +	15 " +	15	20	3400	Ebb.	N.W. 6 mph		100' from Jersey
		843	10'	320	30 " +	0 Neut. 0	8	20	4200				
1:30 P.M.		844	bot. 12'	800	60 " +	40 Acid +	8	20	4200				" " Spuyten Duyvil
		845	10'	690	50 " +	35 " +	8	19	4000				
		846	1'	310	40 " +	30 " +	9	19	4000				by way across
1:45 P.M.		847	10'	330	40 " +	15 " +	9	18	4400				
		848	20'	640	45 " +	25 " +	9	23	4800				
		849	bot. 40'	610	30 " +	30 " +	8	20	4600				
		850	1'	290	40 " +	0 Neut. 0	9	19	4700				by way across
2:00 P.M.		851	10'	400	25 " +	15 Acid 0	9	18	5200				
		852	bot. 20'	470	30 " +	25 " +	9	20	3700				
		853	1'	150	20 " +	0 Neut. 0	9	22	4400				3/4 " "
2:20 P.M.		854	bot. 21'	400	30 " +	35 Acid +	9	22	4600				
		855	20'	640	40 " +	35 " +	35	22	4600				100' from Jersey
2:30 P.M.		856	bot. 13'	550	40 " +	25 " +	20	22	3700				
Oct 1	17	857	10'	320	25 " +	10 " +	40	22	4600				
10:00 A.M.		858	bot. 15'	625000	80 " +	70 " +	30	35	2900	Ebb.		25	Gowanus Canal at Degraw St.
		859	10'	380000	80 " +	60 " +	20	30	4200				Union St. B'ngh.
		860	bot. 15'	254000	80 " +	60 " +	25	40	4100				
10:20 A.M.		861	10'	170000	70 " +	50 " +	25	40	7800				

22

Date & Hour	No Samples taken	Serial Numbers	Depth of Sample	Bacteria per C.C.	Presumptive B. Coli		Turbidity	Color	Chlorine P.p.m.	Tide	Wind	Temp of Water	Location & Remarks
					P.C.C.	A.C.C.							
Oct 1 Cont		862	Surf 1	293000	80 " "	80 ACID "	30	30	6700	Ebb			Greenwich Canal
10 40 AM		863	10	85000	80 " "	80 " "	10	45	10300				Greenwich Canal
		864	Surf 13	127000	80 " "	40 " "	40	012	9800	"			3rd St. Bridge
11 00 AM		865	10	41000	70 " "	35 " "	35	90	3000				
		866	Surf 15	95000	70 " "	30 " "	45	012	10300	"		23° C	Hamilton Ave Bridge
11 30 AM		867	10	54000	70 " "	40 " "	8	130	10300				
		868	1	64000	60 " "	50 " "	22	25	9400	"		32°	Center Greenwich Bay
12 15 PM		869	Surf 22	52000	70 " "	40 " "	8	14	10300				
		870	20	42000		25 " "	10	14	10000				
		871	1	808000	80 " "	70 " "	10	80	3000	Flood			100' from Seneca St. 65th St. Bridge
1 20 PM		872	Surf 15	575000	80 " "	70 " "	10	40	3000				
		873	Surf 20	687000	80 " "	70 " "	8	30	7200	"			End Pier at 52nd St.
3 50 PM	9	874	15	193000	80 " "	40 " "	5	25	7400				
Oct 7.		875	Surf 12	21000	60 " "	30 " "	8	65	3000	Ebb.		23°	Newtown Creek
11 50 AM		876	10	10000	65 " "	25 " "	8	60	10000				Met Ave Bridge
		877	1	60000	60 " "	35 " "	15	70	3000	"			Sloppy & Morgan
11 15 AM		878	Surf 6	42000	45 " "	40 " "	8	35	10000				
		879	1	106000	45 " "	25 " "	12	30	10000	"			Meserole & "
1 30 PM		880	Surf 3	82000	30 " "	30 " "	35	60	10000				
		881	1	16000	70 " "	50 " "	25	65	10000	"			Johnson & Morgan
1 55 "		882	Surf 6	14000	30 " "	60 " "	25	65	10000	"			middle of ship
2 25 "	15	883	1	44000	80 " "	45 " "	50	50	9200	"			3. End
Oct 9.		884	1	92000	60 " "	30 " "	8	18	3100				Below Hernon Ave Bridge
11 00 AM		885	10	3000	50 " "	0 new 0	8	18	3100	Ebb		32.1°	Chelsea Ave. mls
		886	Surf 20	1800	45 " "	0 " "	8	18	3100				Branch at Paige St.
		887	1	18000	60 " "	30 ACID "	7	24	3000				
12 20 PM		888	Surf 10	17000	60 " "	30 " "	7	20	10700	"			Head White Creek Canal
1 15 "		889	1	16000	80 " "	40 " "	8	35	8000				Ship " " near
1 35 "		890	1	18000	40 " "	40 " "	12	60	10000				Petroleum discharge N.E. of Columbus Discharging Co. Manhattan Greenpoint Ave. at N side of creek
		891	Surf 15	5000	80 " "	0 new 0	40	960	10000	"			Foot of Herman Ave
1 55 "		892	10	4500	60 " "	0 " "	9	50	11300				Heater Ave Br. S. Spore
		893	Surf 10	15000	40 " "	35 ACID "	15	30	4100				
2 15 "		894	10	23000	55 " "	25 " "	28	53	10300	"			
		895	1	14000	65 " "	30 " "	28	40	10100				
2 40 "		896	Surf 6	21000	30 " "	25 " "	27	70	10300				
		897	1	16000	45 " "	40 " "	27	70	9800				
3 25 "		898	Surf 10	6500	40 " "	15 " "	33	40	9800	"			
Oct 10.	9	899	1	8000	40 " "	25 " "	29	45	10000			32.1°	Foot Mosbath Ave
11 30 AM		900	1	12000	40 " "	35 " "	32	45	10300	Ebb			Cropper Ave mls. N shore
12 20 PM		901	1	13000	40 " "	40 " "	21	45	10300				De Mott's Glass mls.
1 30 "		902	Surf 7	21000	40 " "	35 " "	19	40	10300				

(23)

Date & Hour	No. Sample taken	Serial Numbers	Depth of Sample	Bacteria per CC	Presumptive		Turbidity	Color	Chlorine per ml	Tide	Wind	Temp of Water	Location & Remarks
					16.6	B. Coli 16.6							
1st 1/2 hr 8:15 A.M.		903	1'	16000	To Acid	25 ABW	2000	40	10000	Ebb			Washington Blvd
2nd "		904	1'	6000	65 "	18 "	2000	94	5700				Long 100' E of Master St. W.
		905	1'	10000	65 "	25 "	25	40	10100				St. Washington Ave
		906	8'	10000	60 "	30 "	20	35	10900				20' E. " "
3rd " 9:15 A.M.	24	907	1'	42000	70 "	40 "	65	50	5200				St. Deserize Ave
		908	1'	18700		50 "	4	12	10200	Ebb	Sw Mod	19°	East River
4th " 9:45 A.M.		909	10'	11700		40 "	4	12	10400				100' off L.I. R.R. Sta
		910	20'	9500		25 "	2	9	10200				L.I. City
		911	1'	10600		25 "	3	10	10600				Produce market near
5th " 10:00 A.M.		912	10'	8500		30 "	4	8	10600				where taking up
		913	20'	4800		30 "	4	9	10800				Clay used to fill
		914	1'	13800		40 "	3	9	11600				Heads over tunnel
		915	10'	3500		40 "	4	12	11700				
6th " 11:00 A.M.		916	20'	12200		30 "	4	10	12200	Ebb			
		917	1'	15900		50 "	7	9	12200				
7th " 1:00 P.M.		918	10'	6400		35 "	4	8	12800				
		919	20'	8500		40 "	4	8	12600	Slack	Sw Mod		
		920	1'	10400		30 "	7	8	12600				
8th " 1 P.M.		921	10'	9500		25 "	4	9	12600				
		922	20'	7000		25 "	4	9	12600	Flood	W Strong		At beginning of flood
		923	1'	19100		50 "	3	10	11900				for 72 hours sum of
9th " 2:00 P.M.		924	10'	14500		50 "	3	11	12100				oil etc. from Ebb
		925	20'	8500		35 "	4	10	12500				out of New York Creek
		926	1'	17000		40 "	3	7	12300				
10th " 3:00 P.M.		927	10'	14500		40 "	4	7	12400				
		928	20'	9500		25 "	4	10	12400				
		929	1'	15900		30 "	4	9	12000				
11th " 4:00 P.M.		930	10'	13800		40 "	4	10	12000				
		931	20'	11700		25 "	4	9	12400				

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 21.

JAMES D. MAHER,
Commissioner.

METROPOLITAN SEWERAGE COMMISSION

INDEX

OF

STATIONS 1 TO 490

showing Chart Location and Samples Taken at each Station
during 1907

Complainant Exhibit No 21.
James D. Marked,
Commissioner.

Station	Chart	Water Squares No.	And Sample Nos.
1	Battery Section	1	
2		2	
3		3	
4	Narrows	4	
5	Section	5, 6	
6		7	
7	Gomarus Section	8	
8		9	
9		10	
10		11	
11		12, 13	
12		14	
13	Section	15, 16, 17, 18, 19, 20, 21, 22, 23	
14		24 to 47 incl.	
15		48 to 51 incl. 873, 874	598
16		52, 53	
17		54, 55	12 to 16 incl.
18		56, 57	
19		58, 59	
20		72	
21			1
22			2
23			3
24			4
25	Gomarus Section		5
26	Battery Section		6
27			7
28		60, 61	
29		62, 63	
30		64, 65	
31		66, 67	
32		68, 69	
33		70, 71, 73, 74	
34	Gomarus Section		8
35	Narrows		9
36	Section		10
37			11
38	Battery Section	75-78, 97-100, 221-224, 538-540 incl. 580-582, 582-584 79-82, 100 104; 225-228, 291-294, 302 307, 313-318, 324-329, 335-340 344-351, 352-362, 368-373, 379-389, 390 395; 401-405, 412-417, 423-428, 434-439, 441-444, 503-506, 508-509 incl.	

39	7	44-46, 100, 102, 229-232, 545-548, 547-570, 589-592, 87-89, 109-112, 225-226, 297-299, 308-310, 319-321, 350-352, 361-363, 352-354, 363-365, 374-376, 385-387, 394-396, 407-409, 410-412, 420, 423-425, 440-442, 449-451, 469-471, 571-573, 583-585, 90-92, 113-115, 237-239, 552-554		
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42	7			
43	7			
44	6	Ground Section		
45	6	Lower Bay Ground Section		
46	2	Ground Section		
47	7	Ground Section		
48	6	Ground Section		
49	5	Ground Section		
50	5	Ground Section		
51	5	Ground Section		
52	5	Ground Section		
53	5	Ground Section		
54	5	Ground Section		
55	5	Ground Section		
56	4	Ground Section		
57	8	Ground Section		
58	8	Ground Section		
59	7	Ground Section		
60	7	Ground Section		
61	7	Ground Section		
62	8	Ground Section		
63	8	Ground Section		
64	8	Ground Section		
65	9	Ground Section		
66	9	Ground Section		
67	10	Ground Section		
68	8	Ground Section		
69	7	Ground Section		

Stratum	Class	Number Samples	Depth
70	Battery Section	181-182	52-59
71		183-184	60-65
72		185-186	66-71
73		187-188	72-77
74		189-190	78-83
75	Kill Van Wall Section	201-202	84-89
76		203-204	90-95
77		205-206	96-101
78		207-208	102-107
79		209-210	108-113
80	Battery Section	211-212	114-119
81		213-214	120-125
82		215-216	126-130, 132-137
83		217-218	138-143
84		219-220	144-149
85	Battery Section	246-247	150-155
86		248-249	156-161
87		250-251	162-167
88		252-253	168-173
89		254-255	174-177
90	Kill Van Wall Section	256-257	178-183
91		258-259	184-189
92		260-261	190-195
93		262-263	196-201
94		264-265	202-207
95	Kill Van Wall Section	267-268	208-213
96		269-270	214-219
97		271-272	220-225
98		273-274	226-231
99		275-276	232-237
100	Kill Van Wall Section	277-278	238-243
101		279-280	244-247
102		281-282	248-253
103		283-284	254-259
104		285-286	260-265
105	Kill Van Wall Section	287-288	266-271
106		289-290, 291, 292	272-277
107		293-294	278-283
108		295-296	284-289
109		297-298	290-295
110	Kill Van Wall Section	299-300	296-301
111		301-302	302-307
112		303-304	308-313
113		305-306	314-319
114		307-308	320-325
115	Kill Van Wall Section	309-310	326-331
116		311-312	332-337
117		313-314	338-343
118		315-316	344-349
119		317-318	350-355

Year	Station	Section	Depth	Notes
1917	Brookbridge	Section	10.0	
1918	Brookbridge	Section	10.0	
1919	Brookbridge	Section	10.0	
1920	Brookbridge	Section	10.0	
1921	Brookbridge	Section	10.0	
1922	Brookbridge	Section	10.0	
1923	Brookbridge	Section	10.0	
1924	Brookbridge	Section	10.0	
1925	Brookbridge	Section	10.0	
1926	Brookbridge	Section	10.0	
1927	Brookbridge	Section	10.0	
1928	Brookbridge	Section	10.0	
1929	Brookbridge	Section	10.0	
1930	Brookbridge	Section	10.0	
1931	Brookbridge	Section	10.0	
1932	Brookbridge	Section	10.0	
1933	Brookbridge	Section	10.0	
1934	Brookbridge	Section	10.0	
1935	Brookbridge	Section	10.0	
1936	Brookbridge	Section	10.0	
1937	Brookbridge	Section	10.0	
1938	Brookbridge	Section	10.0	
1939	Brookbridge	Section	10.0	
1940	Brookbridge	Section	10.0	
1941	Brookbridge	Section	10.0	
1942	Brookbridge	Section	10.0	
1943	Brookbridge	Section	10.0	
1944	Brookbridge	Section	10.0	
1945	Brookbridge	Section	10.0	
1946	Brookbridge	Section	10.0	
1947	Brookbridge	Section	10.0	
1948	Brookbridge	Section	10.0	
1949	Brookbridge	Section	10.0	
1950	Brookbridge	Section	10.0	
1951	Brookbridge	Section	10.0	
1952	Brookbridge	Section	10.0	
1953	Brookbridge	Section	10.0	
1954	Brookbridge	Section	10.0	
1955	Brookbridge	Section	10.0	
1956	Brookbridge	Section	10.0	
1957	Brookbridge	Section	10.0	
1958	Brookbridge	Section	10.0	
1959	Brookbridge	Section	10.0	
1960	Brookbridge	Section	10.0	
1961	Brookbridge	Section	10.0	
1962	Brookbridge	Section	10.0	
1963	Brookbridge	Section	10.0	
1964	Brookbridge	Section	10.0	
1965	Brookbridge	Section	10.0	
1966	Brookbridge	Section	10.0	
1967	Brookbridge	Section	10.0	
1968	Brookbridge	Section	10.0	
1969	Brookbridge	Section	10.0	
1970	Brookbridge	Section	10.0	

Section No.	Location	Owner	Other Sample No.	Other Sample No.
198	Brooklyn Bridge & Boro Park Island		4023	4334
199				4345
200				4356
201				4367
202				4378
203				4389
204				4400
205				4411
206				4422
207				4433
208				4444
209				4455
210				4466
211				4477
212				4488
213				4499
214				4510
215				4521
216				4532
217				4543
218				4554
219				4565
220				4576
221				4587
222				4598
223				4609
224				4620
225				4631
226				4642
227				4653
228				4664
229				4675
230				4686
231				4697
232				4708
233				4719
234				4730
235				4741
236				4752
237				4763
238				4774
239				4785
240				4796
241				4807
242				4818
243				4829
244				4840
245				4851
246				4862
247				4873
248				4884
249				4895
250				4906
251				4917
252				4928
253				4939
254				4950
255				4961
256				4972
257				4983
258				4994
259				5005
260				5016
261				5027
262				5038
263				5049
264				5060
265				5071
266				5082
267				5093
268				5104
269				5115
270				5126
271				5137
272				5148
273				5159
274				5170
275				5181
276				5192
277				5203
278				5214
279				5225
280				5236
281				5247
282				5258
283				5269
284				5280
285				5291
286				5302
287				5313
288				5324
289				5335
290				5346
291				5357
292				5368
293				5379
294				5390
295				5401
296				5412
297				5423
298				5434
299				5445
300				5456
301				5467
302				5478
303				5489
304				5500
305				5511
306				5522
307				5533
308				5544
309				5555
310				5566
311				5577
312				5588
313				5599
314				5610
315				5621
316				5632
317				5643
318				5654
319				5665
320				5676
321				5687
322				5698
323				5709
324				5720
325				5731
326				5742
327				5753
328				5764
329				5775
330				5786
331				5797
332				5808
333				5819
334				5830
335				5841
336				5852
337				5863
338				5874
339				5885
340				5896
341				5907
342				5918
343				5929
344				5940
345				5951
346				5962
347				5973
348				5984
349				5995
350				6006
351				6017
352				6028
353				6039
354				6050
355				6061
356				6072
357				6083
358				6094
359				6105
360				6116
361				6127
362				6138
363				6149
364				6160
365				6171
366				6182
367				6193
368				6204
369				6215
370				6226
371				6237
372				6248
373				6259
374				6270
375				6281
376				6292
377				6303
378				6314
379				6325
380				6336
381				6347
382				6358
383				6369
384				6380
385				6391
386				6402
387				6413
388				6424
389				6435
390				6446
391				6457
392				6468
393				6479
394				6490
395				6501
396				6512
397				6523
398				6534
399				6545
400				6556
401				6567
402				6578
403				6589
404				6600
405				6611
406				6622
407				6633
408				6644
409				6655
410				6666
411				6677
412				6688
413				6699
414				6710
415				6721
416				6732
417				6743
418				6754
419				6765
420				6776
421				6787
422				6798
423				6809
424				6820
425				6831
426				6842
427				6853
428				6864
429				6875
430				6886
431				6897
432				6908
433				6919
434				6930
435				6941
436				6952
437				6963
438				6974
439				6985
440				6996
441				7007
442				7018
443				7029
444				7040
445				7051
446				7062
447				7073
448				7084
449				7095
450				7106
451				7117
452				7128
453				7139
454				7150
455				7161
456				7172
457				7183
458				7194
459				7205
460				7216
461				7227
462				7238
463				7249
464				7260
465				7271
466				7282
467				7293
468				7304
469				7315
470				7326
471				7337
472				7348
473				7359
474				7370
475				7381
476				7392
477				7403
478				7414
479				7425
480				7436
481				7447
482				7458
483				7469
484				7480
485				7491
486				7502
487				7513
488				7524
489				7535
490				7546
491				7557
492				7568
493				7579
494				7590
495				7601
496				7612
497				7623
498				7634
499				7645
500				7656

212	Bridge & Island.	0		467
213		0		468
214		0		469
215		0		470
216		0		471
217		0		472
218		0		473
219		0		474
220		0		475
221	Blackwell's Island	0	745, 766	476 661
222		0		477
223		0		478
224		0		479
225		0		480
226		0		481
227		0		482
228		0		483
229		0		484
230		0		485
231		0		486
232		0	672, 673	487 641
233		0	674, 675	488
234		0		489 640
235		0		490
236		0		491
237		0		492
238		0		
239		0		
240		0		
241		0		
242		0		
243		0		
244		0		
245		0		
246		0		
247		0		
248		0		
249		0		
250		0		
251		0		
252		0		
253		0		
254		0		
255		0		
256		0		
257		0		

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Stratum	Locality	Water Samples Nos.	Soil Samples Nos.
258	Lower Bay	2	508
259	Lower Bay	2	509
260	Lower Bay	2	510
261	Lower Bay	2	511
262	Lower Bay	2	512
263	Manhasset Neck	4	513
264	Manhasset Neck	5	514
265	Manhasset Neck	5	515
266	Manhasset Neck	6	516
267	Manhasset Neck	6	517
268	Manhasset Neck	6	518
269	Manhasset Neck	6	519
270	Manhasset Neck	6	520
271	Manhasset Neck	6	521
272	Manhasset Neck	6	522
273	Manhasset Neck	6	523
274	Manhasset Neck	6	524
275	Manhasset Neck	6	525
276	Manhasset Neck	6	526
277	Manhasset Neck	6	527
278	Manhasset Neck	6	528
279	Manhasset Neck	6	529
280	Manhasset Neck	6	530
281	Manhasset Neck	6	531
282	Manhasset Neck	6	532
283	Manhasset Neck	6	533
284	Manhasset Neck	6	534
285	Manhasset Neck	6	535
286	Hudson River	13	536
287	Hudson River	13	537
288	Hudson River	13	538
289	Hudson River	13	539
290	Hudson River	16	540
291	Hudson River	16	541
292	Hudson River	16	542
293	Hudson River	15	543
294	Hudson River	15	544
295	Hudson River	15	545
296	Hudson River	15	546
297	Hudson River	15	547
298	Hudson River	14	548
299	Hudson River	14	549
300	Hudson River	14	550
301	Hudson River	14	551
302	Hudson River	14	552
303	Hudson River	14	553

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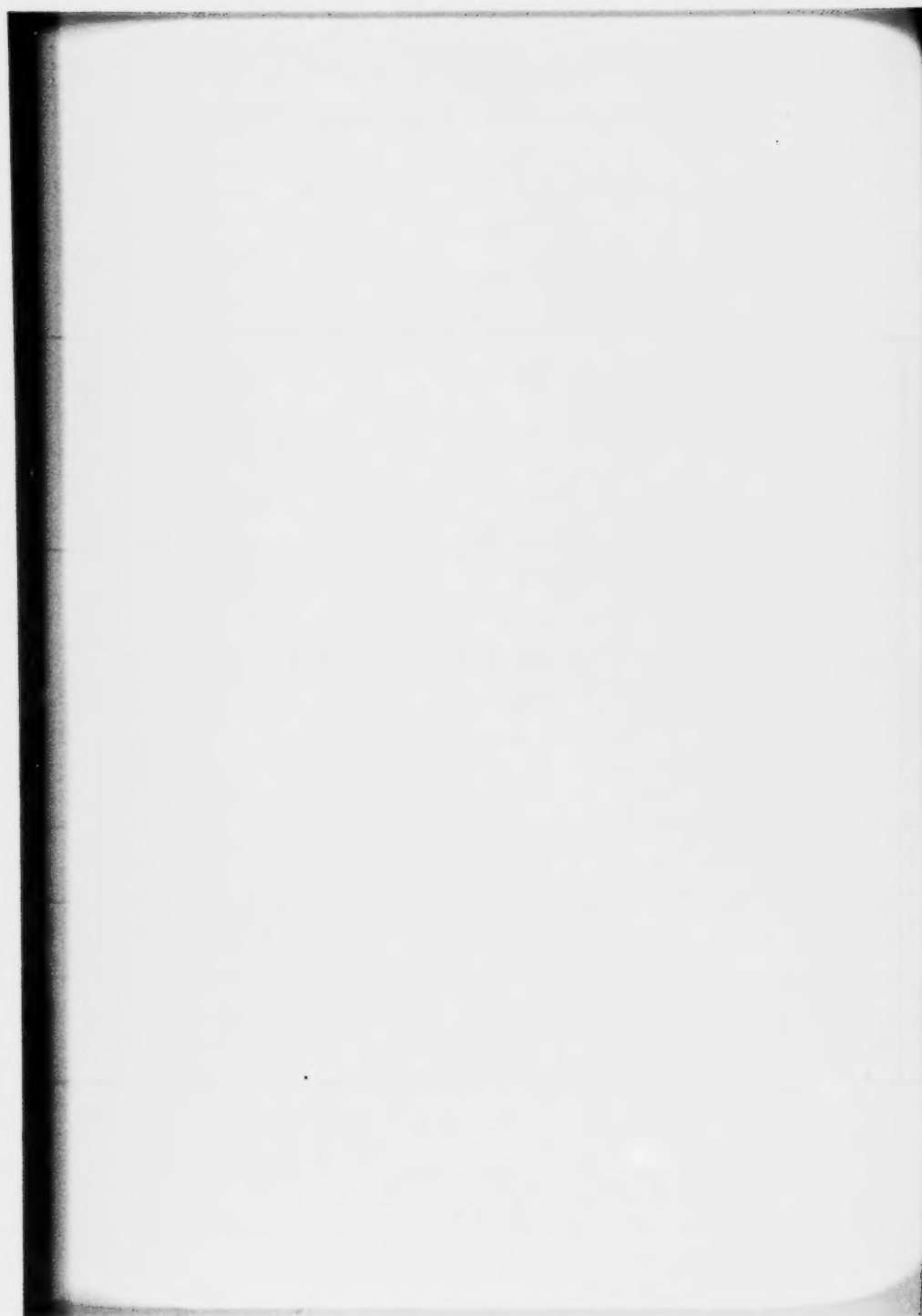
7

Station No.	Chart	Water Samples No's	Bed Samples No's
3500	Lower Bay Central Section		600
3501			601
3502			602
3503			603
3504			604
3505			605
3506			606
3507			607
3508			608
3509			609
3510	Gowanus Section		610
3511			611
3512			612
3513			613
3514			614
3515			615
3516			616
3517			617
3518			618
3519			619
3520	Battery Section	600	
3521		605, 606	
3522		607, 608	
3523		609, 610	
3524		611, 612, 613	
3525		614, 615, 616	
3526		617, 618, 619	
3527		620, 621, 622	
3528		623, 624	
3529		625, 626	
3530	Hudson Section		620-626
3531			623
3532			624
3533			625
3534			626
3535			627
3536			628
3537			629
3538			630
3539			631
3540	Lower Bay Central Section		632
3541			633
3542			634
3543			635
3544			636
3545			637
3546			638
3547			639
3548			640
3549			641

Stratum	Chart	Water Surfaces, etc.	and Surfaces, etc.
396	Long Bay Central Section	1	426
397		2	437
398		2	438
399		2	439
400	Upper Bay Central Section	3	440
401		3	441
402	Battery Section	7	442
403		7	443
404	Gowanus Section	6	444
405		6	445
406	Lower Bay Eastern Section	4	446
407		4	447
408	Gowanus Section	3	448
409		3	449
410	Gowanus Section	5	450
411		5	451
412	Will Van Hall Section	5	452
413		5	453
414	Will Van Hall Section	5	454
415		5	455
416	Will Van Hall Section	5	456
417		5	457
418	Will Van Hall Section	5	458
419		5	459
420	Will Van Hall Section	5	460
421		5	461
422	Will Van Hall Section	5	462
423		5	463
424	Will Van Hall Section	5	464
425		5	465
426	Will Van Hall Section	5	466
427		5	467
428	Will Van Hall Section	5	468
429		5	469
430	Will Van Hall Section	5	470
431		5	471
432	Will Van Hall Section	5	472
433		5	473
434	Will Van Hall Section	5	474
435		5	475
436	Will Van Hall Section	5	476
437		5	477
438	Will Van Hall Section	5	478
439		5	479
440	Will Van Hall Section	5	480
441		5	481

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Page No.	Chart	Other Notes	Other Notes
402	Section 10	019-001-013-017	470
403	Section 10	019-001-013-017	479
404			480-482
405			483
406			484
407			485
408			486
409			487
410			488
411			489
412			490
413			491
414			492
415			493
416			494
417			495
418			496
419			497
420			498
421			499
422			500
423			501
424			502
425			503
426			504
427			505
428			506
429			507
430			508
431			509
432			510
433			511
434			512
435			513
436			514
437			515
438			516
439			517
440			518
441			519
442			520
443			521
444			522
445			523
446			524
447			525
448			526
449			527
450			528
451			529
452			530
453			531
454			532
455			533
456			534
457			535
458			536
459			537
460			538
461			539
462			540
463			541
464			542
465			543
466			544
467			545
468			546
469			547
470			548
471			549
472			550
473			551
474			552
475			553
476			554
477			555
478			556
479			557
480			558
481			559
482			560
483			561
484			562
485			563
486			564
487			565



COMPLAINANTS' EXHIBIT No. 29. James D. Maher,
Commissioner.

July 25, 1907.

Franklin Clarkin, Esq., Ass't Secretary City Club of New York,
#55 West 44th St., New York City.

DEAR SIR: Referring to your communication of June 5th in which you ask for an opinion based upon the studies of this Commission on river pollution, whether the use of river water as it is, would be undesirable for sprinkling or flushing city streets, we beg to state we understand from this that your inquiry relates to the suitability of water taken from the Hudson or East River for use in sprinkling or flushing the streets of the Borough of Manhattan.

In such case an opinion must take into consideration the pollution of the water to be used as measured by the presence of decomposable organic matter and of bacteria capable of producing disease. These questions have engaged the serious attention of this Commission for a number of months and many hundreds of samples of river

and bay water as well as muds deposited therein have been carefully taken and subjected to chemical and biological analyses. The full conclusion to be drawn from this work would at this time be premature and improper. The weight of present evidence may however be stated to indicate strongly the probable inability of the waters of the East and Hudson Rivers and the Upper Bay to assimilate and destroy within a reasonable time the sewage wastes discharged therein. Some of the observations made would no doubt be of present interest to those who are giving the general subject their attention and without in any way emphasizing the relative importance of any particular observation this Commission is willing at this time to announce the results of a series of observations taken along a line projected from the Battery to Jersey Central Railroad Station on the New Jersey shore:—

Bacteria Per C. C. Hudson River Water, Feb. 20, 21, 1907.

Depth.	State of tide.	100' from Pier "A."	500' from Pier "A."	¼ way across.	Mid-stream.	¾ way across.	500' from N. J. C. R.R. Sta.	100' from N. J. C. R.R. Sta.
1'	Flood..	6350	5850	4550	3800	3400	4550	5850
	Ebb....	7950	6350	3800	3500	3600	1900	3050
20'	Flood..	5200	5100	3800	3500	2850	4050	4750
	Ebb....	6350	5850	3500	3300	3300	5300	8500
40'	Flood..	4050	4550	2400	2400	2150	....	....
	Ebb....	4350	3900	2400	2500	2200	....	....
50'	Flood..	3800	2850	2350	....	....	....	....
	Ebb....	3800	4050	2150	2550	....	....	....

3 These matters relate to the general duties of the Commission in determining the sanitary condition of the waters as a whole rather than to the question raised by the City Club and in order that certain special information required by your inquiry might be available it was decided to make a brief investigation of the biological effect of sprinkling with river water surfaces exposed to the same influences of air, sunlight and shade as would be the City streets under the conditions which you mention. For this purpose samples of North River water were taken at the site of the floating baths at the Battery early in the morning before the baths were opened, the tide being flood about one-half ($\frac{1}{2}$) full, the wind southwest and moderate. Two samples A. and B. were taken 20 feet from the Battery Pier, A. being 1 ft. and B. at bottom 15 ft. below the surface. The temperature of the water was $15\frac{1}{2}$ degrees C., the air being 27 degrees C. Both samples had eight points of turbidity, ten points color, about 12,000 parts per million of chlorine representing 2 & sodium chloride and a faint sewage odor. After 48 hours sample

A showed 6350 bacteria per C. C. and sample B 4770. Both gave a positive test for B. Coli (intestinal bacteria) in 24 hours.

A sample of sea water was taken from outside of Sandy Hook. This showed 0 points turbidity, 5 points color, 27,000 parts chlorine equivalent to 4.5% sodium chloride, no odor, no bacteria and negative test for B. Coli. A portion of sample A mixed with an equal portion of this sea water, showed after 48 hours 742 bacteria per c. c., while another portion of sample A mixed with an equal amount of distilled water containing 30% sodium chloride (saturated solution) gave after 48 hours only 104 bacteria per c. c. The results of this test indicate the bactericidal effect of relative strong solutions of salt.

Experiments on Samples of Street Dust.

Two samples of street dust were collected on sterile dishes.

A from spot always in sunlight.

B from spot always in shade.

Equal portions of each were added to 500 c. c., sterilized, distilled water and plated. Sample A shows 1,200,000 bacteria per gram and sample B 8,000,000. Both gave positive tests for B. Coli in 1 c. c. and .1 c. c.

Other equal portions of the two samples were then thoroughly wet with sample of river water before mentioned taken from depth 15 ft. The samples of wet dust were then divided, one half of each being placed in sunlight and the other half in the shade. At the end of six hours all were dry at which time portions of all were mixed with 500 c. c. sterilized distilled water and plated.

A	exposed in sunlight	6	hours	showed	440000	bacteria per gram
A	" " shade	6	" "	"	800000	
B	" " sunlight	6	" "	"	700000	
B	" " shade	6	" "	"	3000000	

Showing again the bactericidal effect of salt water and the more pronounced bactericidal effect of sunlight. All the above platings showed positive tests for B. Coli in 1 c. c. also in .1 c. c. except samples exposed to sunlight.

Similar tests were made with samples of the dust when sprinkled with the pure strong sea water before referred to and with distilled water containing sodium chloride in saturation.

A	with pure sea water	5	hours	in shade	showed	636000	bacteria
							per gram
B	" " " "	5	" "	" "	"	1400000	" "
A	" saturated sol. nace.	5	hrs.	in shade	"	120000	" "
B	" " " "	5	" "	" "	"	140000	" "

Confirming the greater bactericidal effect of salt in stronger solutions. All of the above platings showed positive tests for B. Coli in 1 c. c. and .1 c. c. except samples sprinkled with saturated solution of sodium chloride which gave negative tests in both cases.

6 Remarks.

The places and conditions of taking the samples of river water tested were most favorable as it is believed no purer water touches the shores of Manhattan Island than at the Battery during the strong flood of the tide. Although the tests showed conclusively that salt water and sunlight are somewhat inhibitive to the micro-organisms present in polluted water and in street dust it does not appear that the intestinal bacteria are destroyed by the water containing salt in quantities such as obtained in the river and harbor even when combined with exposure to sunlight for periods long enough to dry the dust containing these organisms.

The possible danger to public health from depositing the germs of disease known to exist in sewage wastes upon the streets whence they may be blown about when in a dry state, we do not believe has been sufficiently disposed of by the tests which we have made to permit us to assure you that the use of river water for flushing or sprinkling the City streets in its present state is desirable.

It is well known that typhoid bacillus will live from several hours to several days in a dry state depending upon the amount of exposure to the sun. Other bacteria which may be present in sewage polluted river water live for varying lengths of time after drying.

This Commission will continue the foregoing studies at other places along the river fronts of both the Hudson and East Rivers

where the pollution of the water is known to be greater than the samples heretofore tested and will be pleased to advise you further with respect to these studies should the results thereof tend in any way to modify the conclusions herein presented.

Yours very truly,

— — —, *Secretary.*

— — —, *President.*

COMPLAINANTS' EXHIBIT No. 30. James D. Maher, Commissioner.

Data Abstracted from the Results of the 705 Observations on Harbor Deposits—As Made by the Metropolitan Sewerage Commission Prior to 1908, and as Given in Complainant's Exhibit No. 14.

TABLE No. 1.

Number of Samples Examined at Each Foot of Depth Below the Harbor Bottom.

Depth below harbor bottom.	Surface	Surface	1 ft.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.
	face.	to	to	to	to	to	to	to
		1 ft.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.	7 ft.
Number of samples examined.....	336	13	35	51	48	54	48	36
	7 ft.	8 ft.	9 ft.	10 ft.	11 ft.	12 ft.	13 ft.	14 ft.
Depth below harbor bottom.	to	to	to	to	to	to	to	or
	8.0	9.0	10 ft.	11 ft.	12 ft.	13 ft.	14 ft.	deeper.
Number of samples examined.....	32	15	9	8	8	4	3	0

TABLE No. 2.

No. of Mud Samples Examined for B. Coli.

	In 1.00 c. c.	In 0.1 c. c.
No. of Samples Examined for B. Coli (Presumptive Test)	275	259
No. of Samples found to contain B. Coli	261	227
No. of Samples not found to contain B. Coli	14	32

TABLE No. 3.

No. of Samples and Depths at Which B. Coli was Found.

Depths below harbor bottom.	Surface	Surface	1 ft.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.
	face.	to	to	to	to	to	to	to
		1 ft.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.	7 ft.
No. of Samples....	198	1	15	16	10	12	7	2

TABLE No. 4.

Putrescibility of Mud.

No. of Samples Observed for Putrescibility.....	110
" " " " to be Putrescible.....	105
" " " " not to be "	5

TABLE NO. 5.

Odors of Various Kinds.

No. of Samples Yielding Each of the Following Odors.

	Faint.	Ordinary.	Strong.	Total.
Sewage Odors	24	134	50	208
Sulphureted Hydrogen Odors.....	..	21	9	30
Gas Odors	3	56	6	65
Petroleum Odors	4	65	7	76
Mouldy Odors .....	..	7	16	23
Earthy Odors	12	36	..	48
Woody Odors .....	..	1	..	1
Coal Tar Odors.....	..	3	2	5
Fishy Odors	2	3	..	5
Aromatic Odors .....	..	1	..	1
Putrid Odors .....	..	..	4	4
Burnt Rubber Odors.....	..	1	1	2
Creosote Odors .....	..	1	..	1
Odorless Samples .....	..	..	..	8

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 31.

JAMES D. MAHER,
Commissioner.



Dissolved Oxygen. Kill van Kull Cross-section and Cores. June 1, 1909
Low water occurred at Governors Island at 11.00 a.m. The wind was southeast with a velocity
of 3 miles per hour.

Sample No.	Hour a.m.	Location of Samples Approximate	Feet below surface	Knot 0	Tidal current	Temp. deg. C	Percent water	Percent Oxygen per litre
35	11.15	20 feet off Columbia Oil Co. pier, Bayonne	Lat 40 39 02 Long 74 05 26	1	Ebb	18	32	5.04
36	11.20	20 feet off Columbia Oil Co. pier, Bayonne	Lat 40 39 02 Long 74 05 26	20	Ebb	18	32	5.16
37	11.45	Midstream, off Jersey St., New Brighton, S. I.	Lat 40 36 57 Long 74 05 26	1	Ebb	18	32	5.34
38	11.55	Midstream, off Jersey St., New Brighton, S. I.	Lat 40 36 57 Long 74 05 26	40	Ebb	18	32	5.47
39	12.20	20 feet off pier at foot of Jersey St., New Brighton, S. I.	Lat 40 38 51 Long 74 05 24	1	Ebb	18	32	4.75
40	12.30	20 feet off pier at foot of Jersey St., New Brighton, S. I.	Lat 40 38 51 Long 74 05 24	10	Ebb	18	32	5.16
41	1.40	Midstream, off Fort Richmond ferry, S. I.	Lat 40 38 35 Long 74 07 52	1	Flood	18	32	5.34
42	2.00	Midstream, off Fort Richmond ferry, S. I.	Lat 40 38 35 Long 74 07 52	40	Flood	18	32	5.16
43	2.20	Midstream, off Sailors' Snug Harbor, S. I.	Lat 40 38 50 Long 74 06 07	1	Flood	18	32	5.64
44	2.30	Midstream, off Sailors' Snug Harbor, S. I.	Lat 40 38 50 Long 74 06 07	40	Flood	17.5	32	5.47
45	2.50	20 feet off Columbia Oil Co. pier, Bayonne	Lat 40 39 02 Long 74 05 26	1	Flood	17.5	32	5.64
46	3.00	20 feet off Columbia Oil Co. pier, Bayonne	Lat 40 39 02 Long 74 05 26	20	Flood	17.5	32	5.77
47	3.10	Midstream, off Jersey St., New Brighton	Lat 40 38 57 Long 74 05 25	1	Flood	17.5	32	5.64
48	3.20	Midstream, off Jersey St., New Brighton	Lat 40 38 57 Long 74 05 25	40	Flood	17.5	32	5.77
49	3.40	20 feet off pier at foot of Jersey St., New Brighton, S. I.	Lat 40 38 51 Long 74 05 24	1	Flood	17	32	5.34
50	4.00	20 feet off pier at foot of Jersey St., New Brighton, S. I.	Lat 40 38 51 Long 74 05 24	10	Flood	17	32	5.47

Note- Samples 1-34 covered preliminary studies of the method.

Ex. 31, P. 1.

Complainant's Exhibit No. 31.

J. Amos, Master,
Commissioner.

Dissolved Oxygen.

Marion River Course. June 2, 1909.

Low water occurred at Governors Island at 12.47 p.m. The wind was east, with a velocity of 8 miles per hour. In the Marion River the ebb current flows from the East River toward the Hudson River and the flood current from the Hudson River toward the East River.

Sample No.	Hour a.m.	Location of Sample	Exact S.	Feet below surface	Tidal current	Temp. water	Percent water	Oxygen	C. G. Percent per saturation
51	11.40	200 feet east of Spuyten	Lat 40 32 41	1	Ebb	18	36	4.45	74
		Devil's bridge	Long 73 56 19						
52	11.50	200 feet east of Spuyten	Lat 40 32 41	16	Ebb	18	36	4.55	76
		Devil's bridge	Long 73 56 29						
53	12.30	At 100 ft. bridge, midstream	Lat 40 49 40	1	Ebb	18	36	4.48	74
			Long 73 56 03						
54	12.40	At 100 ft. bridge, midstream	Lat 40 49 40	20	Ebb	18	36	4.55	76
			Long 73 56 03						

Ex. 31. P. 2.

Described Church. Harlem River cross-section at Third Ave., June 2, 1906.
Low water occurred at Governors Island at 12.47 P.M. The wind was east, with a velocity of 5 miles per hour. In the Harlem River the ebb current flows from the East River toward the Hudson River and the flood current from the Hudson River toward the East River.

Sample No.	Hour P.M.	Location of Sample	Exact S.	Feet below surface	Tidal current	Temp. water Deg.C	Percent land water	Oxygen	
								C. G. Present	per saturation
55	1.20	At Third Ave. bridge, 20 feet from west shore	Lat 40 48 25 Long 73 56 00	1	Ebb	18	36	3.85	59
56	1.28	At Third Ave. bridge, 20 feet from west shore	Lat 40 48 25 Long 73 56 00	20	Ebb	18	36	3.65	61
57	1.36	At Third Ave. bridge, midstream	Lat 40 48 25 Long 73 56 57	1	Ebb	18	36	3.65	59
58	1.40	At Third Ave. bridge, midstream	Lat 40 48 25 Long 73 56 57	20	Ebb	18	36	3.34	56
59	1.50	At Third Ave. bridge, 20 feet from east shore	Lat 40 48 25 Long 73 56 56	1	Ebb	18	36	3.81	64
60	1.56	At Third Ave. bridge, 20 feet from east shore	Lat 40 48 25 Long 73 56 56	20	Ebb	18	36	3.34	56
61	4.08	At Third Ave. bridge, 20 feet from west shore	Lat 40 48 25 Long 73 56 00	1	Flood	18	36	3.85	64
62	4.10	At Third Ave. bridge, 20 feet from west shore	Lat 40 48 25 Long 73 56 00	20	Flood	18	36	3.81	65
63	4.18	At Third Ave. bridge, midstream	Lat 40 48 25 Long 73 56 57	1	Flood	18	36	3.86	64
64	4.30	At Third Ave. bridge, midstream	Lat 40 48 25 Long 73 56 57	20	Flood	18	36	3.98	66
65	4.48	At Third Ave. bridge, 20 feet from east shore	Lat 40 48 25 Long 73 56 56	1	Flood	18	36	3.85	59
66	4.50	At Third Ave. bridge, 20 feet from east shore	Lat 40 48 25 Long 73 56 56	20	Flood	18	36	3.54	56

Ex. 21. P. 3.

Dissolved Oxygen.
 Hudson River Cross-section at Riverdale, June 16, 1906.
 Low water occurred at Governors Island at 1.00 p.m. The wind was north-west, with a velocity
 of 20 miles per hour.

Sample No.	Hour p.m.	Location of Sample	Approximate	Depth, feet below surface	Total current	Temp. water land Deg. C	Percent water	Oxygen U. S. Percent per saturation
67	1.10	Opposite Riverdale, N. Y., 250 feet off New Jersey shore	Lat 40 54 15 Long 73 55 48	1	Ebb	20	72	6.25 100
68	1.20	Opposite Riverdale, N. Y., 150 feet off New Jersey shore	Lat 40 54 15 Long 73 55 48	10	Ebb	20	72	6.00 98
69	1.30	Opposite Riverdale, N. Y., midstream	Lat 40 54 10 Long 73 56 28	1	Ebb	20	72	6.25 100
70	1.35	Opposite Riverdale, N. Y., midstream	Lat 40 54 10 Long 73 56 28	40	Ebb	20	72	6.00 98
71	1.45	Opposite Riverdale, N. Y., 50 feet off Riverdale pier	Lat 40 54 08 Long 73 56 55	1	Ebb	20	72	6.05 98
72	2.00	Opposite Riverdale, N. Y., 50 feet off Riverdale pier	Lat 40 54 08 Long 73 56 55	10	Ebb	20	72	5.77 93
73	2.30	Opposite Riverdale, N. Y., 250 feet off New Jersey shore	Lat 40 54 15 Long 73 55 48	1	Flood	20	72	6.65 91
74	3.40	Opposite Riverdale, N. Y., 250 feet off New Jersey shore	Lat 40 54 15 Long 73 55 48	10	Flood	20	72	6.77 98
75	4.10	Opposite Riverdale, N. Y., midstream	Lat 40 54 10 Long 73 56 28	1	Flood	20	72	6.85 98
76	4.25	Opposite Riverdale, N. Y., midstream	Lat 40 54 10 Long 73 56 28	20	Flood	19.5	72	6.77 98
77	4.35	Opposite Riverdale, N. Y., 50 feet off Riverdale pier	Lat 40 54 08 Long 73 56 55	1	Flood	20	72	6.34 90
78	4.40	Opposite Riverdale, N. Y., 50 feet off Riverdale pier	Lat 40 54 08 Long 73 56 55	10	Flood	20	72	6.47 92

Ev. 21. P. 4.

Discolored water.

Heamat Bay Ocean-section and Passaic River, June 17, 1906.

See water occurred at Governors Island at 1.31 p.m. The wind was southeasterly with a velocity of

20 miles per hour.

Sample No.	Hour p.m.	Location of Samples Approximate	Depth fathoms	Feet below surface	Tidal Stage, Percent out-water	Percent sand per centum	Gravel per centum
79	12.10	Heamat Bay, at C.R.R. of N.J. bridge, 100 feet from east shore	Lat 40 39 17 Long 74 08 17	1	Hbb 21	38	4.15 74
80	12.18	Heamat Bay, at C.R.R. of N.J. bridge, 100 feet from east shore	Lat 40 39 17 Long 74 08 17	10	Hbb 21	38	4.22 78
81	12.26	Heamat Bay, at C.R.R. of N.J. bridge, 100 feet from east shore	Lat 40 39 17 Long 74 08 17	1	Hbb 21	38	4.43 80
82	12.30	Heamat Bay, at C.R.R. of N.J. bridge, near draw	Lat 40 39 17 Long 74 08 46	20	Hbb 21	38	4.58 81
83	12.48	Heamat Bay, at C.R.R. of N.J. bridge, near draw	Lat 40 39 17 Long 74 08 46	1	Hbb 21	38	4.60 82
84	12.50	Heamat Bay, at C.R.R. of N.J. bridge, 2/4 way across from east shore	Lat 40 39 17 Long 74 09 40	10	Hbb 21	38	4.82 79
85	1.18	Passaic River near mouth at C. R. R. of N. J. bridge	Lat 40 43 21 Long 74 07 18	1	Hbb 2.6	82	1.82 31
86	1.20	Passaic River near mouth at C. R. R. of N. J. bridge	Lat 40 43 21 Long 74 07 18	10	Hbb 11.6	82	1.79 31
87	2.00	Passaic River, at foot of N. J. R. R. Ave., Newark	Lat 40 44 49 Long 74 09 58	1	Hbb 82	82	0.63 21
88	2.10	Passaic River, at foot of N. J. R. R. Ave., Newark	Lat 40 44 49 Long 74 09 58	10	Hbb 22	82	0.59 10
89	3.00	Passaic River, at foot of N. J. R. R. Ave., Newark	Lat 40 44 49 Long 74 09 58	1	Flood 22	82	0.70 12
90	3.02	Passaic River, at foot of N. J. R. R. Ave., Newark	Lat 40 44 49 Long 74 09 58	10	Flood 22	82	0.99 19
91	3.40	Passaic River near mouth at C. R. R. of N. J. bridge	Lat 40 43 21 Long 74 07 18	1	Flood 21	82	3.87 62
92	3.48	Passaic River near mouth, at C. R. R. of N. J. bridge	Lat 40 43 21 Long 74 07 18	10	Flood 21	82	3.66 63

Ex. 33. P. 8.

Dissolved Oxygen. Newark Bay Cross-section and Passaic River. (Continued.) June 17, 1909.

Sample No.	Hour P.M.	Approximate Location of Samples	Exact " "	Feet below surface	Tidal Temp.		Percent		Oxygen per litre
					current	water	land	O.C.	
					rent	deg.	water	percent	saturation
93	4.40	Newark Bay, at C.R.R. of N.J. bridge, 200 feet from east shore	Lat 40 39 17 Long 74 08 27	1	Flood	20	28	4.76	83
94	4.45	Newark Bay, at C.R.R. of N.J. bridge, 200 feet from east shore	Lat 40 39 17 Long 74 08 27	10	Flood	20	28	4.86	85
95	4.55	Newark Bay, at C.R.R. of N.J. bridge, near draw	Lat 40 39 17 Long 74 08 46	1	Flood	20	28	5.05	89
96	5.00	Newark Bay, at C.R.R. of N.J. bridge, near draw	Lat 40 39 17 Long 74 08 46	20	Flood	20	28	5.17	91
97	5.10	Newark Bay, at C.R.R. of N.J. bridge, 3/4 way across from east shore	Lat 40 39 17 Long 74 09 40	1	Flood	20	28	5.05	89
98	5.15	Newark Bay, at C.R.R. of N.J. bridge, 3/4 way across from east shore	Lat 40 39 17 Long 74 09 40	10	Flood	20	28	4.86	85

Ex. 31. P. 6.

Discolored Oxygen.
Low water was observed at Governors Island at 4.37 p.m. The wind was west with a velocity of 6 miles per hour. In the Harlem River the ebb current flows from the East River to the Hudson River and the flood current from the Hudson River to the East River.

Sample No.	Hour a.m.	Approximate	Location of Samples	Feet		Tidal current	Temp. water Deg.C	Percent water	Oxygen	
				Exact	below surface				C.C. per litre	saturation
99	10.30	Opposite East 118 St. 20 feet off Randall Is.	Lat 40 47 40 Long 73 55 40	1		Flood	19	36	2.64	45
100	10.35	Opposite East 118 St. 20 feet off Randall Is.	Lat 40 47 40 Long 73 55 40	20		Flood	19	36	3.18	55
101	10.45	Opposite East 118 St. midstream	Lat 40 47 41 Long 73 55 44	1		Flood	19	36	3.24	56
102	10.50	Opposite East 118 St. midstream	Lat 40 47 41 Long 73 55 44	20		Flood	19	36	2.64	44
103	11.00	20 feet off dock, foot of East 118 St.	Lat 40 47 43 Long 73 55 48	1		Flood	19	36	2.25	39
104	11.05	20 feet off dock, foot of East 118 St.	Lat 40 47 43 Long 73 55 48	20		Flood	19	36	2.95	51
105	3.20	Opposite East 118 St. 20 feet off Randall Is.	Lat 40 47 40 Long 73 55 40	1		Ebb	19	36	3.50	60
106	3.25	Opposite East 118 St. 20 feet off Randall Is.	Lat 40 47 40 Long 73 55 40	20		Ebb	19	36	4.10	71
107	3.30	Opposite East 118 St. midstream	Lat 40 47 41 Long 73 55 44	1		Ebb	19	36	3.45	60
108	3.35	Opposite East 118 St. midstream	Lat 40 47 41 Long 73 55 44	20		Ebb	19	36	3.11	54
109	3.40	20 feet off dock, foot of East 118 St.	Lat 40 47 43 Long 73 55 48	1		Ebb	19	36	3.35	58
110	3.45	20 feet off dock, foot of East 118 St.	Lat 40 47 43 Long 73 55 48	20		Ebb	19	36	3.70	64

Ex. 31. P. 7.

Disolved Oxygen. East River Cross-section between Lawrence Point and Stony Point.
June 21, 1909.

Low water occurred at Governors Island at 4.37 p.m. The wind was west, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Exact " g	Feet below surface	Tidal current	Temp. water Deg.C	Percent water	Percent Oxygen per saturation
		Approximate							
111	11.55	20 feet off dock at Lawrence Pt.	Lat 40 47 25 Long 73 54 35	1	Flood	19	32	3.30	57
112	12.00	20 feet off dock at Lawrence Pt.	Lat 40 47 25 Long 73 54 35	20	Flood	19	32	3.20	55
113	12.10	Midstream, off Lawrence Point	Lat 40 47 45 Long 73 54 31	1	Flood	19	32	3.82	56
114	12.15	Midstream, off Lawrence Point	Lat 40 47 45 Long 73 54 31	70	Flood	19	32	3.62	62
115	12.25	20 feet off ferry slip, Stony Pt.	Lat 40 47 57 Long 73 54 31	1	Flood	19	32	3.58	62
116	12.30	20 feet off ferry slip, Stony Pt.	Lat 40 47 57 Long 73 54 31	40	Flood	19	32	4.12	71
117	4.05	20 feet off dock at Lawrence Pt.	Lat 40 47 25 Long 73 54 35	1	Ebb	18	32	4.42	76
118	4.10	20 feet off dock at Lawrence Pt.	Lat 40 47 25 Long 73 54 35	20	Ebb	18	32	4.34	75
119	4.15	Midstream, off Lawrence Point	Lat 40 47 45 Long 73 54 35	1	Ebb	18	32	4.92	95
120	4.20	Midstream, off Lawrence Point	Lat 40 47 45 Long 73 54 31	70	Ebb	18	32	4.72	91
121	4.25	20 feet off ferry slip, Stony Pt.	Lat 40 47 57 Long 73 54 31	1	Ebb	18	32	4.04	70
122	4.30	20 feet off ferry slip, Stony Pt.	Lat 40 47 57 Long 73 54 31	40	Ebb	18	32	4.12	71

Ex. 31. P. 8.

Dissolved Oxygen. East River Cross-section at Throgs Neck. June 23, 1909.
High water occurred at Governors Island at 12.20 p.m. The wind was south, with a velocity of
5 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Exeat " O	Feet below surface	Tidal current	Temp. Deg.C	Percent water	Oxygen per litre	Percent saturation
123	11.00	50 feet off west dock, Throgs Neck	Lat 40 48 19 Long 73 47 45	1	Flood	18.5	28	5.16	88
124	11.05	50 feet off west dock, Throgs Neck	Lat 40 48 19 Long 73 47 45	30	Flood	18.5	28	5.05	86
125	11.20	1/4 way across river from Throgs Neck	Lat 40 48 12 Long 73 47 48	1	Flood	18.5	28	5.47	93
126	11.25	1/4 way across river from Throgs Neck	Lat 40 48 12 Long 73 47 48	40	Flood	18.0	28	5.34	91
127	11.40	1/2 way across river from Throgs Neck	Lat 40 48 04 Long 73 47 52	1	Flood	18.5	28	5.77	98
128	11.45	1/2 way across river from Throgs Neck	Lat 40 48 04 Long 73 47 52	70	Flood	18.0	28	5.65	96
129	12.00	3/4 way across river from Throgs Neck	Lat 40 47 51 Long 73 47 56	1	Flood	18.5	28	5.77	98
130	P.m. 12.05	3/4 way across river from Throgs Neck	Lat 40 47 51 Long 73 47 56	40	Flood	18.0	28	5.65	96
131	12.20	50 feet off dock at Beechhurst, L.I., west of Willets Point	Lat 40 47 48 Long 73 48 00	1	Flood	18.5	28	5.16	88
132	12.25	50 feet off dock at Beechhurst, L.I., west of Willets Point	Lat 40 47 48 Long 73 48 00	20	Flood	18.0	28	5.34	91
133	3.05	50 feet off west dock, Throgs Neck	Lat 40 48 19 Long 73 47 45	1	Ebb	18.5	28	6.08	103
134	3.10	50 feet off west dock, Throgs Neck	Lat 40 48 19 Long 73 47 45	30	Ebb	18.0	20	5.93	101
135	3.25	1/4 way across river from Throgs Neck	Lat 40 48 12 Long 73 47 48	1	Ebb	18.5	28	6.08	103

Ex. H. P. 9.

East River Cross-section at Throgs Neck. (Continued.)
June 23, 1909.

Sample No.	Hour P.M.	Location of Samples		Tidal current	Temp. water Deg.C	Percent land water	Oxygen C. C. percent per saturation
		Approximate	Exact				
			Lat Long	Feet below surface			
136	3.30	1/4 way across river from Throgs Neck	Lat 40 48 12 Long 73 47 48	40	Ebb	18.0	28 5.93 101
137	3.45	1/2 way across river from Throgs Neck	Lat 40 48 04 Long 73 47 52	1	Ebb	18.5	28 6.38 108
138	3.50	1/2 way across river from Throgs Neck	Lat 40 48 04 Long 73 47 52	70	Ebb	18.0	28 6.23 106
139	4.05	3/4 way across river from Throgs Neck	Lat 40 47 51 Long 73 47 56	1	Ebb	18.5	28 6.93 101
140	4.10	3/4 way across river from Throgs Neck	Lat 40 47 51 Long 73 47 56	40	Ebb	18.0	28 5.65 96
141	4.26	50 feet off dock at Beechhurst, L.I. west of Willet's Point	Lat 40 47 48 Long 73 48 00	1	Ebb	18.5	28 6.06 103
142	4.30	50 feet off dock at Beechhurst, L.I. west of Willet's Point	Lat 40 47 48 Long 73 48 00	20	Ebb	18.5	28 5.93 101

Ex. 31. P. 10.

Dissolved Oxygen.
 The Narrows Cross-section at the Narrows. June 24, 1909.
 High water occurred at Governors Island at 1.03 p.m. The wind was west, with a velocity of
 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Feet		Tidal current	Temp. water land Deg. C	Percent water	Oxygen per saturation litre	Percent litre
			Exact	below surface					
143	10.00	50 feet off Fort Wadsworth	Lat 40 36 21 Long 74 03 13	1	Flood	19.0	20	5.34	95
144	10.05	50 feet off Fort Wadsworth	Lat 40 36 21 Long 74 03 13	40	Flood	18.0	20	5.25	94
145	10.20	1/4 way across Narrows, from Fort Wadsworth.	Lat 40 36 23 Long 74 03 02	1	Flood	19.0	20	5.47	98
146	10.25	1/4 way across Narrows, from Fort Wadsworth.	Lat 40 36 23 Long 74 03 02	60	Flood	18.0	20	5.34	95
147	10.40	1/2 way across Narrows,	Lat 40 36 26 Long 74 02 48	1	Flood	19.0	20	5.82	104
148	10.45	1/2 way across Narrows,	Lat 40 36 25 Long 74 02 48	50	Flood	18.0	20	5.49	95
149	11.00	3/4 way across Narrows, from Fort Wadsworth.	Lat 40 36 27 Long 74 02 34	1	Flood	19.0	20	5.77	103
150	11.05	3/4 way across Narrows, from Fort Wadsworth.	Lat 40 36 27 Long 74 02 34	60	Flood	18.0	20	5.54	96
151	11.20	50 feet off Fort Lafayette, east shore	Lat 40 36 29 Long 74 02 23	1	Flood	19.0	20	5.64	101
152	11.25	50 feet off Fort Lafayette, east shore	Lat 40 36 29 Long 74 02 23	10	Flood	19.0	20	5.77	103
153	P.M. 3.20	50 feet off Fort Wadsworth,	Lat 40 36 21 Long 74 03 13	1	Ebb	20.5	28	4.72	84
154	3.25	50 feet off Fort Wadsworth,	Lat 40 36 21 Long 74 03 13	40	Ebb	18.0	28	4.15	70
155	3.40	1/4 way across Narrows, from Fort Wadsworth.	Lat 40 36 23 Long 74 03 02	1	Ebb	20.5	28	4.60	82
156	3.45	1/4 way across Narrows, from Fort Wadsworth.	Lat 40 36 23 Long 74 03 02	60	Ebb	18.0	28	3.54	62

Ex. 31. P. 11.

Dissolved Oxygen. The Narrows Cross-section at the Narrows. (Continued.)
June 24, 1909.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal current	Temp. water Deg.C	Percent land water		Oxygen C. Q. Per cent per saturation
		Approximate	Exact						
157	4.00	1/2 way across Narrows	Lat 40 36 25 Long 74 02 48	1	Ebb	20.5	28	4.96	80
158	4.06	1/2 way across Narrows	Lat 40 36 25 Long 74 02 48	60	ESE	18.0	28	3.95	67
159	4.20	3/4 way across Narrows, from Port Madaworth	Lat 40 36 27 Long 74 02 54	1	Ebb	20.5	28	5.11	91
160	4.25	3/4 way across Narrows, from Port Madaworth	Lat 40 36 27 Long 74 02 54	60	Ebb	16.0	28	4.15	70
161	4.40	50 feet off Port Lafayette, east shore	Lat 40 36 23 Long 74 02 53	1	Ebb	20.5	28	4.60	82
162	4.45	50 feet off Port Lafayette, east shore	Lat 40 36 23 Long 74 02 53	10	Ebb	20.0	28	4.45	80

Ex. 31. P. 12.

Dissolved Oxygen. East River Cross-section between Pier 10, Manhattan and

Pier 10, Brooklyn. June 28, 1909.

High water occurred at Governors Island at 8.00 P.M. The wind was west, with a velocity of 8 miles per hour.

Sample No.	Hour a.m.	Approximate	Location of Samples		Feet below surface	Tidal current	Temp. water Deg. C	Percent land water	Oxygen	
			Exact	0					C.C. per litre	Percent saturation
163	9.45	50 feet off pier 10, Manhattan	Lat 40 42 09	Long 74 00 22	1	Flood	20.8	20	4.06	75
164	9.48	50 feet off pier 10, Manhattan	Lat 40 42 09	Long 74 00 22	30	Flood	19.8	20	4.25	75
165	10.00	1/4 way across East River from pier 10, Manhattan	Lat 40 42 07	Long 74 00 17	1	Flood	20.6	20	4.45	80
166	10.05	1/4 way across East River from pier 10, Manhattan	Lat 40 42 07	Long 74 00 17	40	Flood	19.0	20	4.08	70
167	10.20	1/2 way across East River	Lat 40 42 03	Long 74 00 11	1	Flood	20.5	20	4.37	78
168	10.25	1/2 way across East River	Lat 40 42 03	Long 74 00 11	40	Flood	19.0	20	3.95	68
169	10.40	3/4 way across East River from pier 10, Manhattan	Lat 40 42 00	Long 74 00 06	1	Flood	20.5	20	4.15	74
170	10.45	3/4 way across East River from pier 10, Manhattan	Lat 40 42 00	Long 74 00 06	40	Flood	19.0	20	3.79	65
171	11.00	80 feet off pier 10, Brooklyn	Lat 40 41 57	Long 74 00 00	1	Flood	20.5	20	3.79	68
172	11.05	80 feet off pier 10, Brooklyn	Lat 40 41 57	Long 74 00 00	40	Flood	19.0	20	3.65	63
173	P.M. 2.55	80 feet off pier 10, Manhattan	Lat 40 42 09	Long 74 00 22	1	Ebb	21.0	20	3.26	59
174	3.00	80 feet off pier 10, Manhattan	Lat 40 42 09	Long 74 00 22	50	Ebb	20.0	20	2.43	43
175	3.15	1/4 way across East River from pier 10, Manhattan	Lat 40 42 07	Long 74 00 17	1	Ebb	21.0	20	3.50	64

Ex. 31. P. 15

Dissolved Oxygen. East River Cross-section between Pier 10, Manhattan and
Pier 10, Brooklyn. (Continued.) June 25, 1909.

Sample No.	Hour p.m.	Location of Sample		Tidal current	Temp. Deg. C	Percent water land	Oxygen	
		Approximate	Knot 0				U.S. Percent per saturation	litre per litre
176	3.30	1/4 way across East River from pier 10, Manhattan	Lat 40 42 07 40 Long 74 00 17	Ebb	20.0	28	2.97	82
177	3.35	1/2 way across East River	Lat 40 42 03 1 Long 74 00 11	Ebb	21.0	28	3.86	89
178	3.40	1/2 way across East River	Lat 40 40 03 40 Long 74 00 11	Ebb	20.0	29	2.97	82
179	3.55	3/4 way across East River from pier 10, Manhattan	Lat 40 42 00 1 Long 74 00 08	Ebb	21.0	28	3.83	70
180	4.00	3/4 way across East River from pier 10, Manhattan	Lat 40 42 00 40 Long 74 00 08	Ebb	20.0	28	3.11	58
181	4.15	50 feet off pier 10, Brooklyn	Lat 40 41 57 1 Long 74 00 00	Ebb	21.0	29	3.96	65
182	4.20	50 feet off pier 10, Brooklyn	Lat 40 41 57 40 Long 74 00 00	Ebb	20.0	28	2.67	47

Ex. 31, P. 14.

Dissolved Oxygen.

Easton Green. June 16, 1909.

High water occurred at Governors Island at 8.03 p.m.

Sample No.	Hour A.M.	Location of Samples		Exact Feet below surface	Tidal current	Temp. water Deg. C	Percent land water	Oxygen per litre	Percent saturation
		Approximate	Exact						
183	11.35	At Verron Ave. bridge	Lat 40 44 21 1 Long 73 57 50.	1	Flood	25.5	32	0.00	0.
184	11.45	At Greenpoint Ave. bridge	Lat 40 44 00 1 Long 73 56 30	1	Flood	25.5	32	0.00	0
185	11.55	At Mesker Ave. bridge	Lat 40 43 40 1 Long 73 55 00	1	Flood	25.5	32	0.00	0

Ex. 31. P. 16.

Dissolved Oxygen.

Wallabout Canal. June 26, 1909.

High water occurred at Governors Island at 2.00 p.m.

Sample No.	Hour P.M.	Location of Sample	Approximate	Depth below surface	Feet below surface	Tidal current	Temp. water	Percent water	Percent oxygen per saturation
186	2.00	In Canal near Wallabout Market	Lat 40 41 12 Long 73 58 00	12	3	Flood	73.0	22	9.80
									6

Ex. 21. P. 16.

Discolored Oysters.
 Same as Bay and Canal. June 26, 1909.

When water entered at Governor Island at 2.50 p.m.

Sample No.	Hour	Location of Samples	Feet below surface	Tidal current	Temp. water	Percent land	Percent water	Change per centure
No.	M.S.	Appropriate	Depth					litre
187	10.05	Governor Canal, at 9 ft. bridge	Lat 40 40 25 Long 73 59 50	1	55b	25.5	25	0.00 0
188	10.35	Governor Canal, at Hamilton Ave.	Lat 40 40 15 Long 73 59 54	1	55b	25.5	25	0.00 0
189	10.55	Governor Bay, at entrance to canal	Lat 40 39 55 Long 74 00 25	1	55b	24.0	25	1.00 20
190	11.15	Governor Bay at outer end	Lat 40 39 40 Long 74 01 00	1	55b	23.5	25	2.00 39
191	11.35	By spar buoy off Governor Bay	Lat 40 39 45 Long 74 01 50	1	55b	23.0	25	2.25 41

Dr. H. P. 17.

Discolored Oxygen.

Hallabout Bay. June 29, 1909.

High water occurred at Governors Island at 6.17 p. m. The wind was north-east, with a velocity of 10 miles per hour.

Sample No.	Hour p.m.	Location of Samples Approximate	Exact No.	Feet below surface	Tidal Temp. near rest	Temp. water sent Deg. C	Per- cent O ₂	Oxygen per cubic meter litre time
191	1.05	Near sewer outlet, Foot Division Ave., Hallabout Bay	Lat 40 41 40 Long 73 08 18	1	Flood 55.0	70	0.00	0
192	1.20	Near sewer outlet, Foot Division Ave., Hallabout Bay	Lat 40 41 20 Long 73 08 18	10	Flood 51.0	40	0.08	37
193	1.45	100 feet off Foot of 11 St., Hallabout Bay	Lat 40 41 28 Long 73 08 10	1	Flood 51.0	40	0.61	11
194	1.55	200 feet off Foot of 11 St., Hallabout Bay	Lat 40 41 28 Long 73 08 18	10	Flood 50.5	40	2.43	43
195	2.10	Outer end of Hallabout Bay, junction with East River	Lat 40 41 30 Long 73 08 18	1	Flood 50.5	40	1.17	13
196	2.40	Outer end of Hallabout Bay, junction with East River	Lat 40 41 30 Long 73 08 18	10	Flood 49.5	38	3.64	64
197	3.00	East River under Williamsburg bridge, 100 feet from Brooklyn shore	Lat 40 41 45 Long 73 08 15	1	Flood 49.5	38	3.56	63
198	3.30	East River, under Williamsburg bridge, 150 feet from Brooklyn shore	Lat 40 42 45 Long 73 08 10	10	Flood 49.0	38	3.96	66

Es. 31. P. 19.

St. Paul, N. S. Oregon.
 Rockaway Inlet Ocean-station. June 19, 1900.
 High water occurred at Governors Island at 8.15 P.M. The wind was north-west with a
 velocity of 5 miles per hour.

Sample No.	Hour P.M.	Approximate	Location of Samples		Feet below surface	Tidal Temp. Percent water cent rest deg. C land water 100 deg. F		Oxygen per cent per liter		
200	12.00	50 feet off dock at Rockaway Pt.	Lat	40 34 05	1	55b	50.5	16	5.31	97
			Long	73 53 50						
201	1.10	50 feet off dock at Rockaway Pt.	Lat	40 34 05	20	55b	50.5	16	5.31	97
			Long	73 53 50						
202	1.10	Half-way across inlet	Lat	40 34 15	1	55b	50.5	16	5.04	95
			Long	73 53 55						
203	1.50	Half-way across inlet	Lat	40 34 15	40	55b	50.5	16	5.17	94
			Long	73 53 55						
204	1.40	By gas buoy 2 at west side of inlet	Lat	40 34 20	1	55b	50.5	16	4.81	88
			Long	73 54 05						
205	1.00	By gas buoy 2 at west side of inlet	Lat	40 34 20	10	55b	50.5	16	4.93	93
			Long	73 54 05						

Ex. 33. P. 15.

June 29, 1900.

Jamaica Bay

Dissolved Oxygen.

High water occurred at Governors Island at 5.15 p.m. The wind was north-west with a velocity of 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples	Feet		Tidal current	Temp. Deg. C	Percent land water	Oxygen per litre	Percent saturation
		Approximate	Exact	below surface					
206	2.15	100 feet off dock at Belle Harbor	Lat 40 34 55 Long 73 51 05	1	Flood	21.5	16	5.04	93
207	2.30	100 feet off dock at Belle Harbor	Lat 40 24 56 Long 73 51 05	10	Flood	21.5	15	5.17	96
208	3.05	100 feet off dock at Seaside, Rockaway Beach	Lat 40 35 10 Long 73 49 25	1	Flood	22.5	20	4.15	78
209	3.15	100 feet off dock at Seaside, Rockaway Beach	Lat 40 35 10 Long 73 49 35	10	Flood	22.5	20	4.56	86
210	3.35	At drawbridge near Hammel's Station	Lat 40 35 45 Long 73 48 50	1	Flood	23.0	20	4.15	80
211	3.45	At drawbridge near Hammel's Station	Lat 40 25 45 Long 73 48 50	10	Flood	22.5	20	4.25	80
212	5.00	Point of Baywater Ave., Far Rockaway	Lat 40 36 30 Long 73 46 15	1	Flood	23.0	24	4.15	80
213	5.20	By bridge at head of Norton's Creek	Lat 40 36 00 Long 73 46 10	1	Flood	27.0	28	3.66	77

Ex. 31. P. 20.

Dissolved Oxygen. Jamaica Bay. June 30, 1909.
 Low water occurred at Governors Island at 11.57 a. m. The wind was north-west, with a
 velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Feet		Tidal current	Temp. water	Percent water	Oxygen per liter	Percent saturation
			Exact	Below surface					
		Approximate	0	"	Log. C	Log. C	water		
214	7.30	At bridge, head of Norton's Creek,	Lat 40 26 00	1	Ebb	27.0	28	3.26	65
			Long 73 45 10						
215	7.50	Foot Baywater Ave., Far Rockaway	Lat 40 36 15	1	Ebb	25.0	28	3.86	74
			Long 73 46 10						
216	8.30	In creek near Arverne Station	Lat 40 35 40	1	Ebb	27.0	28	0.00	00
			Long 73 47 25						
217	9.50	In same creek, 1000 feet from shore	Lat 40 35 35	1	Ebb	25.0	28	3.26	63
			Long 73 47 20						
218	10.20	Cross-channel off Arverne parallel to Beach Channel	Lat 40 35 50	1	Ebb	25.0	28	3.26	53
			Long 73 48 25						
219	1.10	100 feet off foot Barnister Ave., Arverne, near sewer outlet	Lat 40 35 45	1	Flood	26.0	28	0.29	6
			Long 73 48 15						
220	1.40	Foot of Pleasant St., Arverne	Lat 40 35 30	1	Flood	27.0	28	1.48	30
			Long 73 45 25						
221	2.20	Foot of Park Ave Arverne	Lat 40 35 30	1	Flood	27.0	28	1.46	30
			Long 73 46 20						
222	3.05	Front yard of house near foot of Pleasant Ave.	Lat 40 35 35	1	Flood	27.0	28	1.19	24
			Long 73 45 10						

Ex. 31. P. 21.

Dissolved Oxygen.

Jamaica Bay. July 1, 1909.

Low water occurred at Governors Island at 12.37 p.m. The wind was south-west with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. Deg. C	Percent water	Oxygen	
		Approximate	Exact				per liter	saturation
223	8.25	Fresh Creek, at mouth	Lat 40 38 30 Long 73 52 56	1	Ebb	25.0	28	2.97
224	9.10	Fresh Creek, half-way up	Lat 40 38 50 Long 73 53 20	1	Ebb	25.0	28	2.97
225	9.50	Fresh Creek, 200 yards below Railroad crossing	Lat 40 39 15 Long 73 53 45	1	Ebb	25.5	28	2.67
226	10.45	Second Creek, near sewer outlet	Lat 40 39 05 Long 73 53 00	1	Ebb	25.0	28	0.00
227	11.05	Second Creek, at mouth	Lat 40 38 55 Long 73 52 40	1	Ebb	25.5	28	0.59
228	11.35	Jamaica Bay, 500 feet off mouth of Second Creek	Lat 40 38 35 Long 73 52 25	1	Ebb	25.5	28	1.19
229	12.00	Jamaica Bay, 500 feet off mouth of Fresh Creek	Lat 40 38 25 Long 73 52 30	1	Ebb	25.5	28	2.08
230	12.50	Jamaica Bay, 500 feet off Sandy Bay shore	Lat 40 37 50 Long 73 53 05	1	Flood	25.0	20	2.67
231	1.20	Creek running back through Camarale	Lat 40 38 15 Long 73 54 00	1	Flood	25.0	20	3.56
232	1.45	Jamaica Bay, 100 feet off main landing, Camarale	Lat 40 37 40 Long 73 53 15	1	Flood	24.0	20	4.15
233	2.05	Jamaica Bay, 200 feet off Bath Pool, Bergen Beach	Lat 40 37 00 Long 73 53 45	1	Flood	24.0	20	4.75

Ex. 31. P. 22.

Dissolved Oxygen. July 1, 1909.
 Rockway Inlet Cross-section.
 High water occurred at Governors Island at 5.47 p.m. The wind was south-west, with a
 velocity of 10 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Tidal current	Temp. Deg.C	Per- cent land water	Oxygen per litre	Percent satura- tion
		Approximate	Exact					
234	2.45	50 feet off dock at Rockway Pt.	Lat 40 34 05 Long 73 53 50	1 Flood	19.0	8	5.93	108
235	2.50	50 feet off dock at Rockway Pt.	Lat 40 34 06 Long 73 53 50	20 Flood	19.0	8	6.08	111
236	3.05	Half-way across inlet	Lat 40 34 13 Long 73 53 55	1 Flood	19.0	8	6.23	113
237	3.10	Half-way across inlet	Lat 40 34 15 Long 73 53 55	40 Flood	19.0	8	6.18	112
238	3.25	By gas buoy 2 at west side of inlet	Lat 40 34 20 Long 73 54 05	1 Flood	19.0	8	6.18	112
239	3.30	By gas buoy 2 at west side of inlet	Lat 40 34 20 Long 73 54 05	10 Flood	19.0	8	6.23	113

Ex. 31. P. 23.

Dissolved Oxygen.

Harlem River at 118 St. July 2, 1909.

Low water occurred at Governors Island at 1.23 p.m. The wind was west, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Approximate	Exact		Tidal current	Temp. Deg.C	Percent water	Percent Oxygen	
			0	"				G.O. per litre	Percent saturation
240	10.30	Harlem River, midstream off East 118 St.	Lat 40 47 41	1	Ebb	20.0	28	2.22	39
241	10.40	Harlem River, midstream off East 118 St.	Long 73 55 44	20	Ebb	20.0	28	2.37	42

Ex. 31. P. 24

Dissolved Oxygen.

East River Course from Hell Gate to Brooklyn Bridge.
July 2, 1905.

Low water occurred at Governors Island at 1.23 p.m. The wind was west, with a velocity of

5 miles per hour.

Sample No.	Hour a.m.	Location of Samples.		Tidal current	Temp. water	Percent water	Oxygen per saturation
		Approximate	Exact				
242	11.00	East River, midstream, opposite East 92 St.	Lat 40 46 50 Long 73 56 25	1 Ebb	19.5	28	2.91 51
243	11.10	East River, midstream, opposite East 92 St.	Lat 40 46 50 Long 73 56 25	30 Ebb	19.0	28	3.04 52
244	11.20	East River, midstream, opposite East 92 St.	Lat 40 46 50 Long 73 56 25	60 Ebb	19.0	28	3.60 53
245	11.30	East River, off East 80 St.	Lat 40 46 10 Long 73 56 50	1 Ebb	19.5	28	2.91 51
246	11.40	East River, off East 80 St.	Lat 40 46 10 Long 73 56 50	50 Ebb	18.0	28	3.34 57
247	12.10	East River, at Queensboro bridge west channel, midstream.	Lat 40 45 25 Long 73 57 30	1 Ebb	19.5	28	3.26 57
248	12.20	East River, at Queensboro bridge west channel, midstream.	Lat 40 45 25 Long 73 57 30	35 Ebb	19.0	28	3.34 58
249	12.30	East River, at Queensboro bridge west channel, midstream.	Lat 40 45 25 Long 73 57 30	70 Ebb	18.0	28	3.80 59
250	12.50	East River, midstream, opposite East 42 St.	Lat 40 44 50 Long 73 57 55	1 Ebb	19.5	28	3.26 57
251	1.05	East River, midstream, opposite East 42 St.	Lat 40 44 50 Long 73 57 55	40 Ebb	18.5	28	3.50 59
252	1.25	East River, midstream, opposite East 23 St.	Lat 40 44 00 Long 73 58 05	1 Ebb	19.5	28	3.20 56
253	1.35	East River, midstream, opposite East 23 St.	Lat 40 44 00 Long 73 58 05	20 Ebb	19.0	28	3.04 52
254	1.45	East River, midstream, opposite East 23 St.	Lat 40 44 00 Long 73 58 05	40 Ebb	10.5	28	3.26 55

Ex. 31. P. 25.

Dissolved Oxygen. East River Course from Hell Gate to Brooklyn Bridge.

July 2, 1909.

(Continued.)

Sample No.	Hour p.m.	Location of Samples	Approximate	Feet		Tidal current	Temp. water land	Percent Deg-C water	C.C. per litre	Percent saturation
				Exact	below surface					
255	2.05	East River, midstream, at Williamsburg bridge		Lat 40 42 49 Long 73 58 21	1	Ebb	19.0	28	3.26	57
256	2.15	East River, midstream, at Williamsburg bridge		Lat 40 42 49 Long 73 58 21	40	Ebb	18.0	28	3.34	57
257	2.50	East River, midstream, at Brooklyn bridge		Lat 40 42 20 Long 73 59 48	1	Slack	19.0	28	3.20	56
258	3.05	East River, midstream, at Brooklyn bridge		Lat 40 42 20 Long 73 59 48	20	Slack	19.0	26	3.34	56
259	3.20	East River, midstream, at Brooklyn bridge		Lat 40 42 20 Long 73 59 48	40	Slack	18.5	28	3.86	65

Kr. 31. P. 26.

Low water occurred at Governors Island at 2.27 p.m. The wind was north-west, with a velocity of 40 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Exact feet below surface	Tidal Temp. per-		Oxygen	
				cent	water cent	C. per	saturation
		Approximate		deg.	deg.	litre	per
260	8.30	East River, midstream, at Brooklyn bridge	Lat 40 42 20 Long 73 59 48	1	Flood 19.0	20	4.08
261	8.36	East River, midstream, at Brooklyn bridge	Lat 40 42 20 Long 73 59 48	20	Flood 19.0	20	4.15
262	8.40	East River, midstream, at Brooklyn bridge	Lat 40 42 20 Long 73 59 48	40	Flood 18.5	20	4.25
263	8.50	East River, midstream, at Williamsburg bridge	Lat 40 42 49 Long 73 58 21	1	Flood 19.0	20	3.79
264	8.56	East River, midstream, at Williamsburg bridge	Lat 40 42 49 Long 73 58 21	40	Flood 18.5	20	4.15
265	9.06	East River, midstream, opposite East 23 St.	Lat 40 44 00 Long 73 58 05	1	Flood 19.0	20	3.79
266	9.10	East River, midstream, opposite East 23 St.	Lat 40 44 00 Long 73 58 05	20	Flood 19.0	20	3.56
267	9.15	East River, midstream, opposite East 23 St.	Lat 40 44 00 Long 73 58 05	40	Flood 18.0	20	4.25
268	9.26	East River, midstream, opposite East 23 St.	Lat 40 44 50 Long 73 57 55	1	Flood 19.0	20	3.86
269	9.30	East River, midstream, opposite East 42 St.	Lat 40 44 50 Long 73 57 55	40	Flood 18.0	20	3.95
270	9.40	East River, midstream, channel at Queensboro bridge	Lat 40 45 25 Long 73 57 30	1	Flood 19.0	20	3.56
271	9.46	East River, midstream, channel at Queensboro bridge	Lat 40 45 25 Long 73 57 30	30	Flood 19.0	20	3.95
272	9.50	East River, midstream, channel at Queensboro bridge	Lat 40 46 25 Long 73 57 30	70	Flood 18.0	20	4.08

W. H. P. 17.

Dissolved Oxygen. East River Source from Brooklyn Bridge to Hell Gate.

July 3, 1909.

(Continued.)

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water Deg. C	Percent water per liter	Oxygen per liter
		Approximate	Exact					
273	10.00	East River, opposite East 80 St.	Lat 40 46 10 Long 73 56 50	1	Flood	19.0	80	3.86
274	10.05	East River, opposite East 80 St.	Lat 40 46 10 Long 73 56 50	60	Flood	18.0	80	3.34
275	10.15	East River, midstream, opposite East 92 St.	Lat 40 46 50 Long 73 56 28	1	Flood	19.0	80	3.80
276	10.20	East River, midstream, opposite East 92 St.	Lat 40 46 50 Long 73 56 28	30	Flood	18.6	80	3.86
277	10.25	East River, midstream, opposite East 92 St.	Lat 40 46 50 Long 73 56 28	60	Flood	18.0	80	3.67

Ex. 31. P. 29

Disolved Oxygen. Hudson River Current from Mt. St. Vincent to Yonkers. July 7, 1909.

high water occurred at Governors Island at 11.10 a.m. The wind was east, with a velocity of 3 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Approximate	Exact " surface	Feet below	Tidal Temp. surface	Per- cent water	Deg-C	land per cent	Oxygen	U.C. Percent
278	11.40	Opposite Mt. St. Vincent, 100 feet off shore	Lat 40 54 50 Long 73 54 41		1	Flood	20.5	64	4.75	79	
279	12.00	Opposite Mt. St. Vincent, 100 feet off shore	Lat 40 54 50 Long 73 54 41		8	Flood	20.5	64	4.65	76	
280	12.20	Opposite Ludlow's Station, 200 feet off shore	Lat 40 55 36 Long 73 54 30		1	Flood	20.5	64	4.75	79	
281	12.30	Opposite Ludlow's Station, 200 feet off shore	Lat 40 55 36 Long 73 54 30		10	Flood	20.5	64	4.25	71	
282	12.50	Opposite Sugar Refinery, Yonkers, 200 feet off shore	Lat 40 56 47 Long 73 54 28		1	Flood	20.5	64	4.45	74	
283	1.00	Opposite Sugar Refinery, Yonkers, 200 feet off shore	Lat 40 56 47 Long 73 54 28		10	Flood	20.5	64	3.95	56	
284	1.20	Opposite recreation pier, Yonkers, 200 feet off shore	Lat 40 56 18 Long 73 54 20		1	Flood	21.0	64	3.65	64	
285	1.30	Opposite recreation pier, Yonkers, 200 feet off shore	Lat 40 56 18 Long 73 54 20		20	Flood	20.5	64	3.44	61	
286	3.00	Opposite Mt. St. Vincent, 100 feet off shore	Lat 40 54 50 Long 73 54 41		1	Ebb	21.0	68	3.86	83	
287	3.30	Opposite Mt. St. Vincent, 100 feet off shore	Lat 40 54 50 Long 73 54 41		0	Ebb	21.0	68	3.64	60	
288	3.60	Opposite Riverdale, 200 feet off shore	Lat 40 54 10 Long 73 54 56		1	Ebb	21.0	68	3.66	63	
289	4.00	Opposite Riverdale, 100 feet off shore	Lat 40 54 10 Long 73 54 56		10	Ebb	21.0	68	3.64	60	
290	4.20	Opposite Spuyten Duyvil, 200 feet off drawbridge	Lat 40 54 50 Long 72 55 16		1	Ebb	21.0	68	3.56	59	

Ex. 31. P. 29.

Dissolved Oxygen.

Hudson River Course from Mt. St. Vincent to Tarrytown.

July 7, 1909.

(Continued.)

Sample No.	Hour P.M.	Location of Sample		Feet below surface	Tidal current	Temp. water cont. Deg. C.	Per- cent water	Oxygen	
		Approximate	Depth					U. S. Percent per entire water	N108
291	4.30	Opposite Spuyten Duyvil	1st 40 80 80	10	ebb	21.0	68	3.54	88
		200 feet off drawbridge	Long 73 80 78						
292	4.50	Opposite second station	Lat 40 80 80	1	ebb	21.0	68	3.71	61
		200 feet off shore	Long 73 80 80						
293	5.00	Opposite third station	Lat 40 80 80	10	ebb	21.0	68	3.54	88
		100 feet off shore	Long 73 80 80						

Ea. 21. P. 30.

Observed Current. Sample No. 1000.
High water occurred at Gravesend Inland at 1.00 p.m. The wind was south-east, with a velocity of 8 miles per hour.

Sample No.	Hour p.m.	Location of Sample	Approximate	Depth fathoms	Feet below surface	Tidal current rest	Temp. water	Per cent	Oxygen
194	12.30	Gravesend Bay, 200 feet off	Lat 40 34 10	1	Flood	20.5	12	5.24	98
		Marine Basin	Long 74 00 00						
195	12.40	Gravesend Bay, 200 feet off	Lat 40 35 10	10	Flood	20.5	12	5.47	103
		Marine Basin	Long 74 00 00						
196	1.00	Gravesend Bay, 200 feet off	Lat 40 35 36	1	Flood	20.5	12	5.54	99
		Atlantic Yacht Club	Long 74 00 00						
197	1.10	Gravesend Bay, 200 feet off	Lat 40 35 38	10	Flood	20.5	12	5.77	107
		Atlantic Yacht Club	Long 74 00 00						
198	1.20	Concy Island Creek, at mouth	Lat 40 34 48	1	Flood	20.5	12	1.79	33
		Concy Island Creek, at mouth	Long 72 59 20						
199	2.18	Concy Island Creek, foot of	Lat 40 34 55	1	Ebb	21.0	12	3.85	73
		12 St., Concy Island	Long 72 59 55						
200	3.10	Concy Island Creek, foot of	Lat 40 34 56	1	Ebb	21.0	12	3.65	73
		17 St., Concy Island	Long 72 59 06						
201	3.40	Gravesend Bay, foot of 12 St., Concy Island	Lat 40 34 50	1	Ebb	21.0	12	0.69	11
		Gravesend Bay, foot of 24 St., Concy Island	Long 72 59 38						
202	4.20	Gravesend Bay, foot of 24 St., Concy Island	Lat 40 34 48	1	Ebb	21.5	12	1.19	33
		Gravesend Bay, 200 feet off	Lat 40 35 36	1	Ebb	20.5	12	3.64	72
203	5.00	Atlantic Yacht Club	Long 74 00 00						

Ms. 31. P. 31.

The Narrows. July 10, 1909.

Dissolved Oxygen.

High water occurred at Governors Island at 2.11 P.M. The wind was southeast, with a velocity of 5 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Tidal current	Temp. water cent. Deg. C	Per cent land water	Oxygen per saturation
		Approximate	Exact, below surface				
311	1.30	Narrows, near Fort Lafayette	Lat 40 36 29 Long 74 02 28	1 Flood	19.0	12	9.34
312	1.40	Narrows, near Fort Lafayette	Lat 40 36 19 Long 74 02 28	1 Flood	19.0	12	9.04
313	2.00	Narrows, near Fort Lafayette	Lat 40 36 29 Long 74 02 28	1 Flood	19.6	12	4.75
							45

Ex. 31. P. 30.

Dissolved Oxygen. Sandy Hook Bay and Shrewsbury River. July 13, 1909.

High water occurred at Governors Island at 5.13 p.m. The wind was south-east, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Approximate	Sextant	Feet below surface	Tidal Temp. current	Temp. Deg. Cent	Oxygen	
								C.C. per litre	Percent saturation
314	11.40	Sandy Hook Bay		Lat 40 27 50	1	Flood	20.5	16	6.23
315	11.50	near Shrewsbury River		Long 74 01 25					113
316	12.20	Sandy Hook Bay		Lat 40 27 50	30	Flood	20.0	16	6.28
317	1.15	near Shrewsbury River		Long 74 01 25					114
318	2.05	Shrewsbury River at Spersaesti Ave.		Lat 40 24 55	1	Flood	22.0	28	6.52
319	2.30	Shrewsbury River, at Highland Landing		Long 73 59 35					113
320	3.00	Navesink River, near mouth		Lat 40 23 50	1	Flood	23.0	28	5.93
321	3.45	Shrewsbury River, opposite mouth of Navesink River		Long 73 58 45					108
322	4.10	Shrewsbury River, at Seabright		Lat 40 22 50	1	Flood	23.0	28	5.84
323	4.20	Sandy Hook Bay, middle of bend of horse shoe point of Sandy Hook		Long 73 59 15					97
		Sandy Hook Bay, west of point of Sandy Hook		Lat 40 21 55	1	Flood	24.0	32	5.64
				Long 73 58 40					106
				Lat 40 26 45	1	Flood	25.0	32	5.64
				Long 73 59 50					106
				Lat 40 28 35	1	Flood	20.5	20	5.23
				Long 74 01 25					113
				Lat 40 26 35	1	Flood	20.5	20	5.93
				Long 74 01 25					108
				Lat 40 26 35	40	Flood	20.0	20	5.64
				Long 74 01 25					103

Ex. 31. P. 34.

Lower Bay. July 13, 1909
 Dissolved Oxygen.
 High water occurred at Governors Island at 5.13 p.m. The wind was south east, with a velocity of 5 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal current	Temp. Percent		Oxygen	
		Approximate	Exact			Deg. C	water	C.C. per litre	Percent saturation
324	4.35	Lower Bay, near buoy 8 in Main Channel	Lat 40 28 45 Long 74 01 25	1	Flood	20.5	16	6.23	113
325	4.40	Lower Bay, near buoy 8 in Main Channel	Lat 40 28 45 Long 74 01 25	40	Flood	20.0	16	6.08	111
326	5.00	Lower Bay, midway between buoy 8 and Homer light	Lat 40 29 50 Long 74 01 00	1	Flood	10.5	16	6.23	113
327	5.10	Lower Bay, midway between buoy 8 and Homer light	Lat 40 29 50 Long 74 01 00	40	Flood	20.0	16	6.08	111

Ex. 31. P. 36.

Lower Bay. July 14, 1909.
 Dissolved Oxygen.
 Low water occurred at Governors Island at 11.50 a.m. The wind was southeasterly, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Sample	Exact O	Feet below surface	Tidal current	Temp.		Oxygen	
						water	land	C.C. Percent	per saturation
		Approximate			Deg.C	Deg.C			litre-ton
328	9.15	Just inside bell-buoy off Sea Gate Inn.	Lat 40 34 15 Long 73 59 50	1	Ebb	19.5	16	4.45	80
329	9.35	Just outside bell-buoy off Sea Gate Inn.	Lat 40 34 05 Long 73 59 50	1	Ebb	19.5	16	4.16	74
330	10.00	On East Bank	Lat 40 32 25 Long 73 59 45	1	Ebb	19.5	16	4.45	80
331	10.30	In 14 foot channel, near buoy A C 15	Lat 40 31 50 Long 74 00 25	1	Ebb	19.5	16	4.75	85
332	11.00	On Rower Shoals	Lat 40 31 20 Long 74 00 35	1	Ebb	19.5	16	4.75	85
333	11.15	In Swash Channel, 700 feet S.W. of Rower light	Lat 40 30 40 Long 74 00 50	1	Ebb	19.5	16	5.04	90
334	11.25	In Swash Channel, 700 feet S.W. of Rower light	Lat 40 30 40 Long 74 00 50	30	Ebb	19.0	16	5.17	92
335	11.55	In Swash Channel, near junction with Main Channel	Lat 40 31 20 Long 74 02 15	1	Ebb	19.5	16	5.04	90
336	12.05	In Swash Channel, near junction with Main Channel	Lat 40 31 20 Long 74 02 15	30	Ebb	19.0	16	5.34	95
337	1.00	In Main Ship Channel, near junction with Swash Channel	Lat 40 31 20 Long 74 02 30	1	Flood	19.5	15	5.17	92
338	1.10	In Main Ship Channel, near junction with Swash Channel	Lat 40 31 20 Long 74 02 30	40	Flood	19.0	16	5.34	95
339	2.00	500 feet west of West Bank light	Lat 40 28 15 Long 74 02 45	1	Flood	19.5	16	5.04	90
340	2.50	Midway between West Bank light and Elm Tree beacon	Lat 40 27 05 Long 73 04 10	1	Flood	19.5	16	5.17	92
341	3.30	1000 feet off Elm Tree beacon	Lat 40 22 45 Long 74 05 30	1	Flood	20.0	16	4.75	85

Ex. 31. P. 36.

Harlem River Course from Ward's Island to Spuyten
Duyvil.

July 15, 1906.

Low water occurred at Governors Island at 12.56 p.m. The wind was southeasterly, with a

velocity of 5 miles per hour.

Sample No.	Hour P.M.	Location of Samples	Approximate	Exact " surface	Tidal current	Temp. water cent	Per-cent per saturation	Oxygen
342	12.30	Opposite East 109 St. midstream	Lat 40 47 23 Long 73 56 07	1	Ebb 21.0	36	1.19	21
343	12.40	Opposite East 109 St. midstream	Lat 40 47 23 Long 73 56 07	20	Ebb 21.0	36	1.21	22
344	1.05	At Third Av. bridge, midstream	Lat 40 48 25 Long 73 55 58	1	Ebb 21.0	36	1.78	32
345	1.15	At Third Av. bridge, midstream	Lat 40 48 25 Long 73 55 58	20	Ebb 21.0	36	1.82	33
346	1.25	At 155 St. bridge, midstream	Lat 40 49 40 Long 73 56 03	1	Ebb 21.0	36	2.57	42
347	1.35	At 155 St. bridge, midstream	Lat 40 49 40 Long 73 56 03	20	Ebb 21.0	36	2.43	43
348	1.50	At 207 St. bridge, midstream	Lat 40 51 46 Long 73 54 54	1	Ebb 21.0	36	2.67	46
349	1.55	At 207 St. bridge, midstream	Lat 40 51 46 Long 73 54 54	16	Ebb 20.0	36	2.73	47
350	2.15	200 feet east of Spuyten Duyvil drawbridge, midstream	Lat 40 52 42 Long 73 55 28	1	Ebb 21.0	36	3.26	56
351	2.20	200 feet east of Spuyten Duyvil drawbridge, midstream	Lat 40 52 42 Long 73 55 28	16	Ebb 20.0	36	3.34	58
352	3.30	200 feet east of Spuyten Duyvil drawbridge, midstream	Lat 40 52 42 Long 73 55 28	1	Flood 21.0	64	4.75	79
353	2.35	200 feet east of Spuyten Duyvil drawbridge, midstream	Lat 40 52 42 Long 73 55 28	16	Flood 21.0	64	4.41	74
354	3.45	At 207 St. bridge, midstream	Lat 40 51 46 Long 73 54 54	1	Flood 21.0	44	3.26	57
355	3.50	At 207 St. bridge, midstream	Lat 40 51 46 Long 73 54 54	16	Flood 21.0	44	3.34	59

Ex. 31. P. 37.

Disolved Oxygen. Harlem River Course from Marble Island to
Spuyten Duyvil. (Continued.) July 15, 1909.

Sample No.	Hour P.M.	Location of Samples Approximate	Exact S.	Feet below surface	Tidal Temp. Per-		Oxygen	
					our- rent	water cent Deg.C land water	U.S. per litre	Percent saturation
356	4.10	At 155 St. bridge, midstream	Lat 40 49 40 Long 73 56 03	1	Flood	21.5	36	2.97
357	4.15	At 155 St. bridge, midstream	Lat 40 49 40 Long 73 56 03	20	Flood	21.0	36	3.04
358	4.25	At Third Ave. bridge, midstream	Lat 40 48 25 Long 73 55 58	1	Flood	21.5	32	2.67
359	4.40	At Third Ave. bridge, midstream	Lat 40 48 25 Long 73 55 58	20	Flood	21.0	32	2.71
360	4.50	Opposite East 109 St., mid-stream	Lat 40 47 23 Long 73 56 07	1	Flood	21.0	32	2.06
361	4.55	Opposite East 109 St., mid-stream	Lat 40 47 23 Long 73 56 07	30	Flood	21.0	32	2.15

Ex. 31. P. 38.

Upper Bay and the Narrows July 16, 1907.
 Dissolved oxygen.
 Low water occurred at Governors Island at 1.27 p.m. The wind was south-east, with a velocity of 10 miles per hour.

Sample No.	Hour a.m.	Approximate Location of Samples	Feet below surface	Tidal current	Temp. water cent Deg.C	Per-cent land water	Oxygen U.C. Percent per saturation
362	11.30	Midway between Battery and Governors Island	Lat 40 41 50 Long 74 01 00	Ebb	20.5	28	3.26 59
363	11.40	Midway between Battery and Governors Island	Lat 40 41 50 Long 74 01 00	Ebb	20.0	28	3.34 59
364	11.50	Midway between Battery and Governors Island	Lat 40 41 50 Long 74 01 00	Ebb	19.0	28	3.67 63
365	P.m.	Governors Island	Lat 40 41 50 Long 74 01 00	Ebb	20.5	28	3.56 64
366	1.00	Near buoy G 2 north of Robbins Reef	Lat 40 40 12 Long 74 03 10	Ebb	20.5	28	3.67 64
367	1.10	Near buoy G 2 north of Robbins Reef	Lat 40 40 12 Long 74 03 10	Ebb	19.0	28	3.50 60
368	1.50	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	Ebb	20.5	28	3.66 57
369	2.00	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	Ebb	20.0	28	3.95 70
370	2.10	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	Ebb	19.0	28	3.79 66
371	4.10	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	Flood	20.0	20	4.46 81
372	4.20	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	Flood	19.5	20	4.56 81
373	4.30	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	Flood	19.0	20	4.37 78
374	4.45	Near buoy G 2, north of Robbins Reef	Lat 40 40 12 Long 74 03 10	Flood	20.0	20	4.15 76
375	4.50	Near buoy G 2, north of Robbins Reef	Lat 40 40 12 Long 74 03 10	Flood	19.5	20	4.28 76

Ex. 31. P. 39.

Dissolved Oxygen. Upper Bay and the Narrows. (Continued). July 16, 1909.

Sample No.	Hour P.m.	Location of Samples		Exact G. " "	Yset below surface	Tidal current	Temp. Deg. C	Percent water	Percent land	Oxygen	
		Approximate								C.C.	Percent per saturation
376	4.55	Near buoy G. 2. north of Rebbins Reef	Lat 40 40 12 Long 74 03 10		50	Flood	19.0	20		4.08	73
377	5.20	Midway between Battery and Governors Island	Lat 40 41 00 Long 74 01 00		1	Flood	20.0	28		3.86	59
378	5.22	Midway between Battery and Governors Island	Lat 40 41 50 Long 74 01 00		30	Flood	19.6	28		3.98	69
379	5.25	Midway between Battery and Governors Island	Lat 40 41 50 Long 74 01 00		60	Flood	19.0	26		3.80	56

Ex. 31. F. 40.

Observed oxygen. Kill van Kull. July 17, 1900.
Low water occurred at Governors Island at 2.21 P.M. The wind was east, with a velocity of 8 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water in deg. C.	Percent dissolved oxygen	Oxygen per litre water
		Approximate	Exact					
360	9.30	Upper Bay, off Tompkinsville	Lat 40 38 20 Long 74 04 16	1	Ebb	21.0	28	3.26
361	9.40	Upper Bay, off Tompkinsville	Lat 40 36 20 Long 74 04 16	43	Ebb	20.0	28	4.16
362	10.10	Kill van Kull, west end	Lat 40 38 30 Long 74 06 40	1	Ebb	21.3	28	4.36
363	10.30	Kill van Kull, west end	Lat 40 36 30 Long 74 06 40	90	Ebb	20.0	28	4.76
364	10.35	Kill van Kull, off Fort Richmond	Lat 40 38 35 Long 74 06 00	1	Ebb	21.0	28	4.56
365	10.45	Kill van Kull, off Fort Richmond	Lat 40 36 35 Long 74 06 00	23	Ebb	20.0	26	4.48
366	11.00	Bedine Creek at mouth	Lat 40 36 20 Long 74 07 35	1	Ebb	22.0	29	3.86

Ex. 31. P. 41.

Dissolved Oxygen

Upper Bay July 17, 1909

Low water occurred at Governors Island at 2.11 p.m. The wind was east, with a velocity of 8 miles per hour.

Sample No.	Hour M.M.	Location of Samples		Exact 0 " "	Feet below surface	Tidal current	Temp. water Deg.C.	Percent Oxygen	
		Approximate						land water	per saturation litre
387	11.25	At end of pier, foot of 68th St. Brooklyn	Lat 40 38 40 Long 74 01 35		1	Ebb	21.0	26	2.08
388	11.35	At end of pier, foot of 68th St. Brooklyn	Lat 40 38 40 Long 74 01 35		20	Ebb	20.0	26	2.43
389	11.45	By buoy off Swanus Bay	Lat 40 39 30 Long 74 01 35		1	Ebb	21.0	26	2.08
390	11.50	By buoy off Swanus Bay	Lat 40 39 30 Long 74 01 35		20	Ebb	21.0	26	2.13
391	12.00	Off Atlantic Docks in Butternalk Channel	Lat 40 41 08 Long 74 00 50		1	ebb	21.0	26	2.28
392	12.08	Off Atlantic Docks in Butternalk Channel	Lat 40 41 08 Long 74 00 50		40	Ebb	20.0	26	3.34
393	12.18	500 feet northeast of Ellis Is- land	Lat 40 41 55 Long 74 02 15		1	Ebb	21.0	26	3.26
394	12.20	500 feet northeast of Ellis Is- land	Lat 40 41 55 Long 74 02 15		20	Ebb	20.0	26	3.24

Ex. 31. P. 42.

Observed current Upper Bay, Narrows and Lower Bay July 20, 1870
Low water occurred at Governors Island at 4.47 p.m. The wind was southeast with a velocity of
8 miles per hour.

Sample No.	Hour a.m.	Location of Sample		Expt 0	Feet below surface	Tidal current deg. C.	Percent Oxygen	
		Approximate					land water	C.O. per litre saturation
395	11.45	Upper Bay, near bell buoy just south of Governors Island	Lat 40 40.55 Long 74 01 36	40	40.55	Ebb	20	3.20
396	11.50	Upper Bay, near Bell Buoy just p.m. south of Governors Island	Lat 40 40 56 Long 74 01 38	40	40 56	Ebb	20	3.34
397	12.15	Upper Bay, 1/4 mile east of Robbins Reef light	Lat 40 39 30 Long 74 03 37	40	39 30	Ebb	20	3.60
398	12.30	Upper Bay, 1/4 mile east of Robbins Reef light	Lat 40 39 30 Long 74 03 37	40	39 30	Ebb	20	3.68
399	12.45	Narrows, midway between Forts	Lat 40 36 16 Long 74 02 48	40	36 16	Ebb	20	3.90
400	12.50	Narrows, midway between Forts	Lat 40 36 23 Long 74 02 48	40	36 23	Ebb	20	3.98
401	2.50	Lower Bay, 800 feet off Forts Point	Lat 40 34 36 Long 74 00 50	40	34 36	Ebb	16	4.37
402	2.55	Lower Bay, 800 feet off Forts Point	Lat 40 34 36 Long 74 00 50	40	34 36	Ebb	16	4.86

Ex. 31. P. 43.

Dissolved Oxygen.

Lower Bay. July 23, 1909.

High water occurred at Governors Island at 11.03 a.m. The wind was southeast, with a velocity of 8 miles per hour.

Sample No.	Hour a.m.	Location of Sample	Depth in feet	Feet below surface	Tidal stage	Temp. water	Per cent dissolved oxygen	Oxygen per litre	Percent saturation
403	7.10	Lower Bay, 300 feet off Fortson Point	Lat 40 34 35 Long 74 00 30	1	Flood	19.0	10	0.00	91
404	8.15	Lower Bay, 450 feet off Fortson Point	Lat 40 34 35 Long 74 00 30	20	Flood	19.0	12	0.00	92
405	9.15	Lower Bay, near buoy A C B	Lat 42 30 15 Long 73 57 40	1	Flood	19.0	8	0.03	113
406	9.30	Lower Bay, near buoy A C B	Lat 40 30 15 Long 73 57 40	40	Flood	19.0	6	0.10	109

En. 31. P. 04

Resolved Cuygen the Herres, July 31, 1899.

High water occurred at Governors Island at 11.05 a.m. The wind was southeast, with a velocity of 5 miles per hour.

Sample No.	Hour P.M.	Location of sample		Depth in fathoms	Feet below surface	Vital Temp. per cent		Oxygen per cent
		Approximate				air-vent	water	
419	4.40	Herres, midway between forts	Lat 40 36 25	1	80b	19.0	12	4.15
			Long 74 02 40					74
420	4.50	Herres, midway between forts	Lat 40 36 30	40	80b	19.0	12	4.25
			Long 74 02 40					76

Da. St. p. 40

Blomfield Ocean.

Upper Bay. July 21, 1900.

High water occurred at Governors Island at 11.00 a.m. The wind was southeasterly, with a velocity of 8 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Depth fathoms	Feet below surface	Tidal current direction	Temp. water surface	Per cent land water	Oxygen	
		Approximate							T.C. percent per saturation	
421	5.25	Upper Bay, 1000 feet off N.Y.C.	Lat 40 40 20 Long 74 01 20	1	Ebb	19.6	16	2.56	64	
422	5.30	Upper Bay, 1000 feet off N.Y.C.	Lat 40 40 20 Long 74 01 20	20	Ebb	16.8	16	3.44	65	

Es. 21. P. 47

Dissolved Oxygen.

Hudson River, Upper Bay and Lower Bay.

July 22, 1909.

High water occurred at Governors Island at 11.53 a.m. The wind was south, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current Deg.C	Per-cent air-water	Oxygen	
		Approximate	Exact 0'				C.C. per litre	Percent saturation
423	10.20	Hudson River, midstream, off Gansevoort St.	Lat 40 44 35 Long 74 01 10	1	Flood	20.5	36	3.58 63
424	10.25	Hudson River, midstream, off Gansevoort St.	Lat 40 44 35 Long 74 01 10	60	Flood	19.0	36	3.65 63
425	10.45	Hudson River, midstream, off Desbrosses St.	Lat 40 43 30 Long 74 01 15	1	Flood	20.5	36	3.80 67
426	10.46	Hudson River, midstream, off Desbrosses St.	Lat 40 43 30 Long 74 01 15	20	Flood	20.0	36	3.86 67
427	10.52	Hudson River, midstream, off Desbrosses St.	Lat 40 43 30 Long 74 01 15	40	Flood	20.0	36	3.95 70
428	11.20	Hudson River, midstream, off Pier A	Lat 40 42 19 Long 74 01 34	1	Flood	20.5	32	3.80 68
429	11.25	Hudson River, midstream, off Pier A	Lat 40 42 19 Long 74 01 34	40	Flood	20.0	32	3.58 64
430	11.40	Upper Bay, 500 feet east of Liberty Island	Lat 40 41 20 Long 74 02 25	1	Flood	20.0	28	3.66 64
431	11.45	Upper Bay, 500 feet east of Liberty Island	Lat 40 41 20 Long 74 02 25	20	Flood	20.0	28	3.56 62
432	11.48	Upper Bay, 500 feet east of Liberty Island	Lat 40 41 20 Long 74 02 25	50	Flood	19.5	28	3.50 61
433	12.10	Upper Bay, near bell-buoy 62	Lat 40 40 12 Long 74 03 10	1	Flood	20.0	28	3.80 67
434	12.13	Upper Bay, near bell-buoy 62	Lat 40 40 12 Long 74 03 10	50	Flood	19.5	28	3.95 70
435	12.25	Upper Bay, near Robbins Reef bell-buoy	Lat 40 39 10 Long 74 03 50	1	Flood	20.0	20	3.95 72

Dissolved Oxygen.

Hudson River, Upper Bay and Lower Bay. (Continue 4.)

July 22, 1909.

Sample No.	Hour p.m.	Location of Samples		Feet below surface	Tidal current	Temp. Deg. C.	Per-cent water	Oxygen	
		Approximate	Exact					C.C. per litre	Percent saturation
426	12.27	Upper Bay, near Robbins Reef	Lat 40 39 10 Long 74 03 50	30	Flood	19.5	20	4.15	74
427	12.30	Upper Bay, near Robbins Reef	Lat 40 39 10 Long 74 03 50	60	Flood	19.5	20	4.08	73
428	12.50	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	1	Flood	20.0	16	4.45	81
439	12.55	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	90	Flood	19.0	16	4.37	78
440	1.15	Lower Bay, 500 feet off Nortons Point	Lat 40 34 36 Long 74 00 50	1	Flood	20.0	16	4.56	83

Ex. 31. p.49

Dissolved Oxygen. Lower Bay, Upper Bay and Hudson River. July 22, 1909.
 Low water occurred at Governors Island at 5.51 p.m. The wind was south, with a velocity of
 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Tidal current Deg.C	Temp. water Deg.C	Per- cent saturation	Oxygen per litre
		Approximate	Exact G. S.				
441	2.45	Lower Bay, 500 feet off Nortons Point.	Lat 40 34 35 Long 74 00 50	1	20.5	20	4.34
442	3.05	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	1	20.5	20	3.80
443	3.10	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	90	19.0	20	3.86
444	3.30	Upper Bay, near Robbins Reef bell-buoy	Lat 40 39 10 Long 74 02 48	1	20.5	28	3.80
445	3.32	Upper Bay, near Robbins Reef bell-buoy	Lat 40 39 10 Long 74 03 50	30	20.0	28	3.95
446	3.37	Upper Bay, near Robbins Reef bell-buoy	Lat 40 39 10 Long 74 03 50	60	20.0	28	3.56
447	3.50	Upper Bay, near bell-buoy G 2	Lat 40 40 12 Long 74 03 10	1	20.5	28	3.86
448	3.55	Upper Bay, near bell-buoy G 2	Lat 40 40 12 Long 74 03 10	50	19.5	28	3.95
449	4.05	Upper Bay, 500 feet east of Liberty Island	Lat 40 41 20 Long 74 02 26	1	20.5	28	3.20
450	4.07	Upper Bay, 500 feet east of Liberty Island	Lat 40 41 20 Long 74 02 26	20	20.0	28	3.26
451	4.10	Upper Bay, 500 feet east of Liberty Island	Lat 40 41 20 Long 74 02 26	50	19.5	28	3.24
452	4.19	Hudson River, midstream, opposite Pier A	Lat 40 42 19 Long 74 01 34	1	20.5	32	3.20
453	4.21	Hudson River, midstream, opposite Pier A	Lat 40 42 19 Long 74 01 34	40	20.0	32	3.34
454	4.35	Hudson River, midstream, off Debosses St.	Lat 40 43 30 Long 74 01 16	1	20.5	32	3.50
455	4.37	Hudson River, midstream, off Debosses St.	Lat 40 43 30 Long 74 01 16	20	20.5	32	3.58

Sample No.	Hour p.m.	Location of Samples	Exost o	Feet below surface	Tidal current	Temp. water cent Deg.C	Per- cent land water	Oxygen per saturation
456	4.40	Hudson River, midstream, off Desbrosses St.	Lat 40 43 30 Long 74 01 15	40	ebb	20.0	32	3.65
457	4.50	Hudson River, midstream, off Gansevoort St.	Lat 40 44 35 Long 74 01 10	1	ebb	20.5	32	3.80
458	4.53	Hudson River, midstream, off Gansevoort St.	Lat 40 44 35 Long 74 01 10	60	ebb	19.5	32	3.86

Sr. 21. p.51

Dissolved Oxygen. East River July 24, 1909
 High water occurred at Governors Island at 12.53 p.m. The wind was north, with a velocity
 of 30 miles per hour.

Sample No.	Hour a.m.	Location of Samples Approximate	East 0.	Feet below surface	Tidal current	Temp. Deg.C.	Percent water saturation	Oxygen C.C. per litre
459	9.05	200 feet off east dock on Governors Island	Lat 40 41 35 Long 74 00 50	1	Flood	20.5	28	3.26
460	9.08	200 feet off east dock on Governors Island	Lat 40 41 35 Long 74 00 50	40	Flood	19.5	28	3.24
461	9.15	200 feet off Pier 38, Brooklyn	Lat 40 40 40 Long 74 01 15	1	Flood	20.5	28	2.97
462	9.18	200 feet off Pier 38, Brooklyn	Lat 40 40 40 Long 74 01 15	40	Flood	19.5	28	3.04
463	9.28	500 feet off Beards Erie Basin in Upper Bay	Lat 40 40 20 Long 74 01 15	1	Flood	20.5	28	3.56
464	9.30	500 feet off Beards Erie Basin in Upper Bay	Lat 40 40 20 Long 74 01 15	30	Flood	19.5	28	3.67
465	10.00	100 feet off Pier 10, Brooklyn	Lat 40 41 55 Long 73 59 55	1	Flood	20.5	28	3.26
466	10.05	100 feet off Pier 10, Brooklyn	Lat 40 41 55 Long 73 59 55	40	Flood	19.5	28	3.20
467	10.25	Foot of Oliver Street, Manhattan, Pier-head line	Lat 40 42 20 Long 73 59 50	1	Flood	20.5	28	1.82
468	10.30	Foot of Oliver Street, Manhattan, Pier-head line	Lat 40 42 20 Long 73 59 50	20	Flood	20.0	28	2.90
469	10.55	Foot of Corlears Street, Manhattan	Lat 40 42 35 Long 73 59 45	1	Flood	20.5	28	3.56
470	11.00	Foot of Corlears Street, Manhattan	Lat 40 42 35 Long 73 59 45	20	Flood	20.0	28	3.67

Received Oxygen. Hudson River. July 26, 1909.
High water occurred at Governors Island at 3 p.m. Ebb current ran down the river practically all day. The wind was north, with a velocity of 10 miles per hour.

Sample No.	Hour	Location of Samples	Approximate	Depth	Feet below surface	Temp. water	Percent water	Oxygen
	a.m.					Deg. C	per litre	per cent saturation
471	11.00	500 feet off Pier 4	Let 40 42 25 Long 74 01 10	1	Ebb	20.0	36	3.26 58
472	11.05	500 feet off Pier 4	Let 40 42 25 Long 74 01 10	40	Ebb	19.0	36	3.34 58
473	11.20	500 feet off foot West 23 St.	Let 40 45 09 Long 74 00 45	1	Ebb	20.0	52	3.56 61
474	11.25	500 feet off foot West 23 St.	Let 40 45 09 Long 74 00 45	40	Ebb	19.0	52	3.65 62
475	11.40	500 feet off foot West 59 St.	Let 40 46 28 Long 73 59 45	1	Ebb	20.0	52	3.50 60
476	11.43	500 feet off foot West 59 St.	Let 40 46 28 Long 73 59 45	40	Ebb	19.0	52	3.56 60
477	12.00	500 feet off foot West 96 St.	Let 40 47 50 Long 73 58 40	1	Slack	20.0	52	3.26 56
478	12.05	500 feet off foot West 96 St.	Let 40 47 50 Long 73 58 40	40	Slack	19.0	52	3.50 60
479	12.15	500 feet off foot West 108 St.	Let 40 48 20 Long 73 58 25	1	Slack	20.5	64	3.86 64
480	12.30	500 feet off foot West 108 St.	Let 40 48 20 Long 73 58 25	20	Slack	19.5	64	3.95 66
481	3.00	At foot of West 155 St., Washington Heights	Let 40 50 00 Long 73 57 05	1	Ebb	21.0	64	4.15 69
482	3.15	At foot of West 149 St., Manhattan	Let 40 49 45 Long 73 57 15	1	Ebb	21.0	64	4.08 69
483	3.25	At foot of West 156 St.	Let 40 49 20 Long 73 57 20	1	Ebb	21.0	64	3.95 66

Ex. 31. p. 53

Dissolved Oxygen.

Hudson River, August 19, 1909.

High water occurred at Governors Island at 10.44 a.m. The wind was south, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. Per cent deg. C	Oxygen per litre	Percent saturation
		Approximate	Exact				
484	9.15	Hudson River, midstream, opposite Pier 1, Manhattan	Lat 40 42 25 Long 74 01 35	1	Flood 21.5 20	3.58	66
485	9.20	Hudson River, midstream, opposite Pier 1, Manhattan	Lat 40 42 25 Long 74 01 35	50	Flood 20.5 20	3.65	66
486	9.40	Hudson River, 1000 feet off Pier 17, Manhattan	Lat 40 43 06 Long 74 01 25	1	Flood 21.5 20	3.26	60
487	9.45	Hudson River, 1000 feet off Pier 17, Manhattan	Lat 40 43 05 Long 74 01 25	20	Flood 21.0 28	3.34	61
488	9.50	Hudson River, 1000 feet off Pier 17, Manhattan	Lat 40 43 05 Long 74 01 25	40	Flood 20.5 28	3.56	64
489	11.00	Hudson River, midstream, opposite Pier 32, Manhattan	Lat 40 43 40 Long 74 01 15	1	Flood 21.5 28	3.20	55
490	11.05	Hudson River, midstream, opposite Pier 32, Manhattan	Lat 40 43 40 Long 74 01 15	40	Flood 21.0 28	3.34	61
491	11.30	Hudson River, midstream, opposite Pier 43, Manhattan	Lat 40 44 05 Long 74 01 25	1	Flood 21.5 28	3.26	55
492	11.35	Hudson River, midstream, opposite Pier 43, Manhattan	Lat 40 44 05 Long 74 01 25	20	Flood 21.0 28	3.34	61
493	11.40	Hudson River, midstream, opposite Pier 43, Manhattan	Lat 40 44 05 Long 74 01 25	40	Flood 20.5 28	3.58	64

Dissolved Oxygen.

Madison River Course from 42 St. to Tenhara.

September 7, 1909.

High water occurred at Governors Island at 2.35 p.m. The wind was southeast, with a velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Sample		Exact 0'	Feet below surface	Tidal Temp. on-vent per Deg. C	Oxygen per saturation
		Approximate					
494	10.20	500 feet off foot	West 42 St.	Lat 40 45 45	1	Ebb	21.0 52 3.76 65
495	10.25	500 feet off foot	West 42 St.	Long 74 00 15	35	Ebb	20.5 52 3.82 76
				Lat 40 45 45			
496	10.35	500 feet off foot	West 72 St.	Long 74 00 15	1	Ebb	21.0 52 4.05 70
				Lat 40 46 55			
497	10.37	500 feet off foot	West 72 St.	Long 73 59 25	20	Ebb	20.5 52 4.12 71
				Lat 40 46 55			
498	11.00	500 feet off foot	West 72 St.	Long 73 59 25	25	Ebb	20.5 52 4.21 73
				Lat 40 46 55			
499	11.35	500 feet off foot	West 110 St.	Long 73 59 25	1	Flood	21.0 52 4.12 71
				Lat 40 48 20			
500	12.00	500 feet off foot	West 110 St.	Long 73 59 25	40	Flood	20.0 52 4.21 71
				Lat 40 48 20			
501	12.15	500 feet off foot	West 140 St.	Long 73 59 25	1	Flood	21.0 52 4.25 75
				Lat 40 49 30			
502	12.17	500 feet off foot	West 140 St.	Long 73 57 30	20	Flood	20.5 52 4.41 76
				Lat 40 49 30			
503	12.30	500 feet off foot	West 140 St.	Long 73 57 30	40	Flood	20.0 52 4.62 77
				Lat 40 49 30			
504	12.37	500 feet off foot	Washington Point	Long 73 57 30	1	Flood	21.0 52 4.62 80
				Lat 40 51 10			
505	12.40	500 feet off foot	Washington Point	Long 73 56 50	40	Flood	20.0 52 4.62 82
				Lat 40 51 10			
506	1.00	500 feet off	Inwood bathing beach	Long 73 56 50	1	Flood	21.0 52 4.91 85
				Lat 40 52 20			
507	1.02	500 feet off	Inwood bathing beach	Long 73 56 55	20	Flood	20.5 52 5.00 86
				Lat 40 52 20			

Ex. 31, p. 55

Dissolved Oxygen.

Hudson River Course from 42 St. to Yonkers.

(Continued.) September 7, 1909.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal Temp. cent	Per- cent water	Oxygen per saturation
		Approximate	Exact				
808	1.08	800 feet off Inwood bathing beach	Lat 40 52 30 Long 73 58 58	40	Flood 20.0	52	5.12 88
809	1.10	800 feet off Spuyten Bayvil drawbridge	Lat 40 52 50 Long 73 58 30	1	Flood 21.0	52	4.79 83
810	1.28	800 feet off Spuyten Bayvil drawbridge	Lat 40 52 50 Long 73 58 30	40	Flood 20.0	52	4.91 83
811	1.45	800 feet off Riverdale Station	Lat 40 54 15 Long 73 56 00	1	Flood 21.0	52	5.72 99
812	1.48	800 feet off Riverdale station	Lat 40 54 15 Long 73 56 00	20	Flood 20.5	52	5.29 91
813	1.52	800 feet off Riverdale station	Lat 40 54 15 Long 73 56 00	40	Flood 20.0	52	5.20 88
814	2.18	800 feet off Federal refinery, Yonkers	Lat 40 56 50 Long 73 54 30	1	Flood 21.0	52	4.91 85
815	2.18	800 feet off Federal refinery, Yonkers	Lat 40 56 50 Long 73 54 30	40	Flood 20.6	52	5.12 87
816	2.40	800 feet off Power Plant, northern end of Yonkers	Lat 40 57 00 Long 73 54 10	1	Flood 21.0	52	5.20 90
817	2.43	800 feet off power plant, northern end of Yonkers	Lat 40 57 00 Long 73 54 10	20	Flood 21.0	52	5.29 91
818	2.48	800 feet off power plant, northern end of Yonkers	Lat 40 57 00 Long 73 54 10	35	Flood 20.8	52	5.42 94

September 9, 1909

High water occurred at Governors Island at 3.23 p.m. The wind was south-east, with a velocity of 10 miles per hour.

Sample No.	Hour p.m.	Location of Sample	Approximate	Depth, feet below surface	Tidal Temp. per cent water out	Per cent water out	Oxygen per cent	U.C. per cent
819	1.30	Passaic River, near foot of N. J. R. R. Avenue, Newark	Lat 40 44 49 Long 74 09 58	1	Flood 22.0	52	0	0
820	1.32	Passaic River, near foot of N. J. R. R. Avenue, Newark	Lat 40 44 49 Long 74 09 58	10	Flood 21.5	52	0	0
821	2.17	Passaic River, 100 feet above P. R. R. freight bridge	Lat 40 44 10 Long 74 09 46	1	Flood 21.5	40	2.02	36
822	2.30	Passaic River, 100 feet above P. R. R. freight bridge	Lat 40 44 10 Long 74 09 46	10	Flood 21.0	40	2.06	36
823	2.40	Passaic River, near mouth	Lat 40 43 15 Long 74 07 50	1	Flood 21.0	40	2.09	51
824	2.43	Passaic River, near mouth	Lat 40 43 15 Long 74 07 50	10	Flood 20.5	40	2.94	53
825	3.00	Newark Bay, near Lehigh Valley R. R. bridge	Lat 40 41 56 Long 74 07 15	1	Flood 21.0	28	4.06	74
826	3.02	Newark Bay, near Lehigh Valley R. R. bridge	Lat 40 41 56 Long 74 07 15	10	Flood 20.5	20	4.12	74
827	3.23	Newark Bay, near bell-hoop off Centreville	Lat 40 40 15 Long 74 08 10	1	Flood 21.0	28	3.76	68
828	3.25	Newark Bay, near bell-hoop off Centreville	Lat 40 40 15 Long 74 08 10	10	Flood 20.5	28	4.12	72
829	3.40	Newark Bay, near C. R. R. of N. J. Avebridge	Lat 40 39 17 Long 74 08 46	1	Flood 20.5	28	3.76	67
830	3.42	Newark Bay, near C. R. R. of N. J. Avebridge	Lat 40 39 17 Long 74 08 46	15	Flood 20.5	28	3.82	67
831	3.45	Newark Bay, near C. R. R. of N. J. Avebridge	Lat 40 39 17 Long 74 08 46	30	Flood 20.0	29	3.91	69

Mr. S. L. P. 87

Discharged Oxygen.
 Tomsco River, Beers Bay and Kill van Kull.
 (Continued.) September 9, 1866.

Bottle No.	Hour p.m.	Location of Sample	Depth in fathoms	Feet below surface	Tidal temp. on surface	Temp. at depth	Per cent of water lost	Oxygen per cubic foot	Oxygen per liter	Oxygen per cubic foot	Oxygen per liter
522	4.00	Kill van Kull, west end	Lat 40 29 25 Long 74 00 45	1	Flood 20.0	20	3.47	63			
523	4.03	Kill van Kull, west end	Lat 40 29 45 Long 74 00 45	25	Flood 20.0	20	3.61	66			
524	4.13	Kill van Kull, opposite Seilers Bay Harbor	Lat 40 30 20 Long 74 04 15	1	Flood 19.5	20	3.76	67			
525	4.17	Kill van Kull, opposite Seilers Bay Harbor	Lat 40 30 20 Long 74 04 15	20	Flood 19.0	20	3.82	68			
526	4.20	Kill van Kull, opposite Seilers Bay Harbor	Lat 40 30 20 Long 74 04 15	40	Flood 19.0	20	4.21	73			
527	4.40	Kill van Kull, opposite Conestable Hook	Lat 40 30 15 Long 74 05 15	1	Flood 20.0	20	4.12	70			
528	4.48	Kill van Kull, opposite Conestable Hook	Lat 40 30 15 Long 74 05 15	40	Flood 19.0	20	4.52	81			

Am. M. 9.00

September 9, 1909.

Low water occurred at Governors Island at 10.40 a.m. The wind was southeasterly, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Sample	Approximate	Fath		Total current	Temp. water	Percent sand	W. F. percent per nature-siltage
				East	below surface				
539	11.10	East River, midstream, off Battery	Lat 40 41 30 Long 74 00 35	1	8bb	50.0	32	3.18	56
540	11.12	East River, midstream, off Battery	Lat 40 41 30 Long 74 00 35	20	8bb	19.5	32	3.24	57
541	11.18	East River, midstream, off Battery	Lat 40 41 30 Long 74 00 35	40	8bb	19.0	32	3.21	60
542	11.22	East River, midstream, at Brooklyn bridge	Lat 40 42 30 Long 73 59 48	1	8bb	20.0	32	3.18	58
543	11.35	East River, midstream, at Brooklyn bridge	Lat 40 42 30 Long 73 59 48	60	8bb	19.0	32	3.23	61
544	11.54	East River, midstream, at Williamsburg bridge	Lat 40 42 30 Long 73 59 48	1	8bb	20.0	32	3.47	61
545	11.57	East River, midstream, at Williamsburg bridge	Lat 40 42 30 Long 73 59 48	20	8bb	19.2	32	3.23	62
546	12.00	East River, midstream, at Williamsburg bridge	Lat 40 42 30 Long 73 59 48	40	8bb	19.0	32	3.51	62
547	12.14	East River, midstream, off East 23 St.	Lat 40 44 00 Long 73 59 32	1	8bb	20.0	32	3.24	57
548	12.17	East River, midstream, off East 23 St.	Lat 40 44 00 Long 73 59 32	40	8bb	19.0	32	3.51	62
549	12.25	East River, east channel off East 43 St.	Lat 40 41 00 Long 73 57 30	1	8bb	20.0	32	3.47	61
550	12.27	East River, east channel off East 43 St.	Lat 40 41 00 Long 73 57 30	20	8bb	19.0	32	3.22	60
551	12.30	East River, east channel off East 43 St.	Lat 40 41 00 Long 73 57 30	40	8bb	19.0	32	3.31	67

See 51, p. 89

Dissolved Oxygen. East River Course from Battery to Closen Point.
(Continued). September 9, 1909.

Sample No.	Hour P.M.	Location of Sample	Depth in fathoms	Feet below surface	Tidal current	Temp. water in deg. C.	Per cent saturation	Oxygen per liter
552	12.42	East River, east channel, off East 70 ft.	Lat 40 45 45 Long 73 54 50	1	Flood	20.0	22	3.47
553	12.45	East River, east channel, off East 70 ft.	Lat 40 45 45 Long 73 54 50	20	Flood	19.0	22	3.53
554	12.50	East River, at Hell Gate	Lat 40 46 00 Long 73 54 00	1	Flood	20.0	22	3.61
555	12.57	East River, at Hell Gate	Lat 40 46 00 Long 73 54 00	20	Flood	19.8	22	3.52
556	1.00	East River, at Hell Gate	Lat 40 46 00 Long 73 54 00	40	Flood	19.0	22	3.91
557	1.22	East River, between North and South Brother Islands	Lat 40 47 35 Long 73 53 35	1	Flood	19.8	22	4.04
558	1.25	East River, between North and South Brother Islands	Lat 40 47 35 Long 73 53 35	40	Flood	19.0	22	4.52
559	1.50	East River, midstream, off Closen Point	Lat 40 48 00 Long 73 53 00	1	Flood	19.0	22	4.33
560	1.55	East River, midstream, off Closen Point	Lat 40 48 00 Long 73 53 00	20	Flood	19.0	22	4.52
561	2.00	East River, midstream, off Closen Point	Lat 40 48 00 Long 73 53 00	70	Flood	18.6	22	4.41

Discolored Oxygen. Long Island Sound. September 20, 1900.
 Low water occurred at Governors Island at 10.40 a.m. The wind was southeasterly, with a
 velocity of 8 miles per hour. The current was flowing eastward.

Sample No.	Hour P.M.	Location of Samples	Exact Depth	Feet below surface	Tidal Temp. at- water	Per- cent deg. C	Oxygen
562	2.30	Long Island Sound, 600 feet east of Throgs Neck	Lat 42 48 20 Long 73 47 20	1	Flood 19.0	28	8.49 95
563	2.35	Long Island Sound, 600 feet east of Throgs Neck	Lat 42 48 20 Long 73 47 20	40	Flood 18.5	29	8.72 97
564	2.55	Long Island Sound, near Stepping Stones light	Lat 42 49 30 Long 73 46 30	1	Flood 19.0	29	8.90 100
565	2.57	Long Island Sound, near Stepping Stones light	Lat 42 49 30 Long 73 46 30	20	Flood 18.5	29	8.68 100
566	3.00	Long Island Sound, near Stepping Stones light	Lat 42 49 30 Long 73 46 30	40	Flood 18.5	28	6.02 102

2a. 81. p. 61

Dissolved Oxygen.

East River Course from Hell Gate to Battery.

September 10, 1909.

Low water occurred at Governors island at 11.27 a.m. The wind was southeast, with a velocity of 40 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. Deg. C.	Percent land water	Oxygen	
		Approximate	Exact				per litre	saturation
			Feet below surface					
567	9.56	Hell Gate, off East 90 St.	Lat 40 46 30 Long 73 56 30	1	19.5	32	4.05	71
568	9.57	Hell Gate, off East 90 St.	Lat 40 46 30 Long 73 56 30	40	19.0	32	4.21	74
569	10.10	West Channel, off East 59 St.	Lat 40 45 25 Long 73 57 30	1	19.5	32	3.76	68
570	10.12	West Channel, off East 59 St.	Lat 40 45 25 Long 73 57 30	20	19.0	32	3.82	67
571	10.15	West Channel, off East 59 St.	Lat 40 45 25 Long 73 57 30	40	19.0	32	3.91	69
572	10.25	Off East 34 St., midstream	Lat 40 44 25 Long 73 58 00	1	19.5	32	3.76	66
573	10.29	Off East 34 St., midstream	Lat 40 44 25 Long 73 58 00	40	19.0	32	3.61	63
574	10.35	At Williamsburg bridge, midstream	Lat 40 42 49 Long 73 58 21	1	19.5	32	3.53	62
575	10.37	At Williamsburg bridge, midstream	Lat 40 42 49 Long 73 58 21	20	19.0	32	3.76	66
576	10.40	At Williamsburg bridge, midstream	Lat 40 42 49 Long 73 58 21	40	19.0	32	3.91	69
577	10.47	At Brooklyn bridge, midstream	Lat 40 42 20 Long 73 59 48	1	19.5	32	3.47	61
578	10.50	At Brooklyn bridge, midstream	Lat 40 42 20 Long 73 59 48	40	19.0	32	3.61	63
579	10.55	Off Battery, midstream	Lat 40 41 50 Long 74 00 50	1	19.5	32	3.47	61
580	10.57	Off Battery, midstream	Lat 40 41 50 Long 74 00 50	20	19.0	32	3.82	67
581	11.00	Off Battery, midstream	Lat 40 41 50 Long 74 00 50	40	19.0	32	3.91	69

EX. 51, p. 68

Unabsorbed Oxygen. Kill van Kull. September 21, 1909.

Low water occurred at Governors Island at 12.27 p.m. The wind was northwest, with a velocity of 40 miles per hour.

Sample No.	Hour s.m.	Location of Samples		Kest 0	Feet below surface	Tidal cur- rent	Temp. water Deg.C	Percent land water	Oxygen	
		Approximate							C.C. Percent per satura- tion	litre tion
582	9.40	Upper Bay, 500 feet off St. George ferry	Lat 40 28 55 Long 74 04 50	28 55 04 50	1	Ebb	19.5	28	4.91	87
583	9.43	Upper Bay, 500 feet off St. George ferry	Lat 40 28 55 Long 74 04 50	28 55 04 50	40	Ebb	19.0	28	5.12	88
584	10.06	Kill van Kull, midstream, off New Brighton station	Lat 40 38 57 Long 74 06 25	38 57 06 25	1	Ebb	19.5	28	4.33	76
585	10.08	Kill van Kull, midstream, off New Brighton station	Lat 40 38 57 Long 74 06 25	38 57 06 25	20	Ebb	19.0	28	4.41	76
586	10.10	Kill van Kull, midstream, off New Brighton station	Lat 40 38 57 Long 74 06 25	38 57 06 25	40	Ebb	19.0	28	4.52	78
587	10.25	Kill van Kull, midstream, off Sailors Snug Harbor	Lat 40 38 50 Long 74 06 07	38 50 06 07	1	Ebb	19.5	28	3.76	66
588	10.28	Kill van Kull, midstream, off Sailors Snug Harbor	Lat 40 38 50 Long 74 06 07	38 50 06 07	40	Ebb	19.0	28	4.21	73
589	10.45	Kill van Kull, midstream, off Port Richmond ferry	Lat 40 38 35 Long 74 07 52	38 35 07 52	1	Ebb	19.5	28	4.05	71
590	10.47	Kill van Kull, midstream, off Port Richmond ferry	Lat 40 38 35 Long 74 07 52	38 35 07 52	20	Ebb	19.0	28	4.41	76
591	10.50	Kill van Kull, midstream, off Port Richmond ferry	Lat 40 38 35 Long 74 07 52	38 35 07 52	30	Ebb	19.0	28	4.52	78
592	11.10	Kill van Kull, west end,	Lat 40 28 35 Long 74 09 30	28 35 09 30	1	Ebb	19.5	28	4.06	71
593	11.12	Kill van Kull, west end,	Lat 40 28 35 Long 74 09 30	28 35 09 30	20	Ebb	19.0	28	4.21	73

Ex. 31. p.63

Dissolved Oxygen.

Lower Bay. September 13, 1909.

Low water occurred at Governors Island at 1.55 p.m. The wind was southeast, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. water Deg.C	Percent land water	Oxygen	
		Approximate	Exact				C.C. per litre	Percent saturation
594	11.00	Near Ambrose Channel buoy 24	Lat 40 33 30 Long 74 01 35	1	Ebb 19.5	16	4.34	78
595	11.05	Near Ambrose Channel buoy 24	Lat 40 33 30 Long 74 01 35	20	Ebb 19.0	16	5.59	100
596	11.10	Near Ambrose Channel buoy 24	Lat 40 33 30 Long 74 01 35	35	Ebb 18.5	16	5.72	102
597	11.30	In Fourteen Foot Channel, near buoy A C 20	Lat 40 32 25 Long 74 00 45	1	Ebb 19.5	16	4.62	83
598	11.35	In Fourteen Foot Channel, near buoy A C 20	Lat 40 32 25 Long 74 00 45	25	Ebb 18.5	16	5.72	102
599	12.35	Between Ambrose and Fourteen Foot Channels, near buoy A C 10	Lat 40 31 00 Long 73 55 45	1	Ebb 19.5	16	4.62	83
600	12.40	Between Ambrose and Fourteen Foot Channels, near buoy A C 10	Lat 40 31 00 Long 73 55 45	20	Ebb 19.0	16	5.72	102
601	1.05	About 1000 feet north of buoy A C 4	Lat 40 30 20 Long 73 57 00	1	Ebb 20.0	16	6.49	100
602	1.10	About 1000 feet north of buoy A C 4	Lat 40 30 20 Long 73 57 00	20	Ebb 19.5	16	6.19	110
603	1.20	Near Ambrose Channel buoy 4	Lat 40 30 10 Long 73 56 55	1	Ebb 20.0	16	5.79	105
604	1.25	Near Ambrose Channel buoy 4	Lat 40 30 10 Long 73 56 55	35	Ebb 19.5	16	6.17	110
605	1.35	Near Ambrose Channel buoy 3	Lat 40 29 55 Long 73 57 05	1	Ebb 20.0	16	5.49	100
606	1.37	Near Ambrose Channel buoy 3	Lat 40 29 55 Long 73 57 05	20	Ebb 19.5	16	5.89	105
607	1.47	100 feet north of Gedney Channel buoy 6	Lat 40 29 30 Long 73 57 30	1	Ebb 20.0	16	5.79	105

Resolved Oxygen. Lower Bay. (Continued). May to June 13, 1909.

Sample No.	Hour P.M.	Location of Samples	Approximate	Feet		Tidal Temp. Percent air-water land	Deg. C water	Oxygen	
				Exact	below surface			C.C. Percent per saturation	litre per litre
508	1.50	100 feet north of Gedney Channel buoy 6		Lat 40 29 39	30	Flood	19.0	16	5.89
509	2.10	Between Gedney Channel buoys 6 and 5		Long 73 57 20		Flood	19.5	16	5.79
510	2.15	Between Gedney Channel buoys 6 and 5		Lat 40 29 25	1	Flood	18.5	16	6.02
511	2.25	200 feet south of Gedney Channel buoy 5		Long 73 57 20		Flood	19.5	16	5.79
512	2.28	200 feet south of Gedney Channel buoy 5		Lat 40 29 10	28	Flood	19.0	16	5.89
513	2.40	100 feet south of buoy C B 1 off Sandy Hook		Long 73 57 20		Flood	19.5	16	6.07
514	2.43	100 feet south of buoy C B 1 off Sandy Hook		Lat 40 29 15	30	Flood	19.0	16	6.19
515	2.55	500 feet southeast of buoy C B 3 off Sandy Hook		Long 73 58 15		Flood	19.5	16	6.07
516	3.00	500 feet southeast of buoy C B 3 off Sandy Hook		Lat 40 28 50	1	Flood	19.0	16	6.19
517	3.30	1000 feet northeast of buoy N 8		Long 73 59 10	35	Flood	19.5	16	5.49
518	3.35	1000 feet northeast of buoy N 8		Lat 40 28 55	1	Flood	18.5	16	5.89
519	3.55	500 feet southwest buoy C 8 1 near Swash Channel		Long 74 01 20	15	Flood	19.5	16	5.59
520	4.00	500 feet southwest buoy C 8 1 near Swash Channel		Lat 40 29 35	35	Flood	18.5	16	6.02

Dr. J. P. 65

Dissolved Oxygen.

Lower Bay. September 14, 1909.

Low water occurred at Governors Island at 2.40 p.m. The wind was southeast, with a velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples approximate	Lat °	Long °	Feet below surface	Tidal cur- rent	Temp. Deg.C	Per- cent land water	Oxygen	
									C.C.	Percent saturation
621	10.30	Main Ship Channel, 200 feet east of West Bank light	Lat 40 32 20	Long 74 02 30	1	Ebb	19.5	16	4.91	83
622	10.35	Main Ship Channel, 200 feet east of West Bank light	Lat 40 32 20	Long 74 02 30	35	Ebb	18.5	16	5.29	94
623	10.55	Sveach Channel, near Main Ship Channel	Lat 40 31 26	Long 74 02 20	1	Ebb	19.5	16	4.91	88
624	11.00	Sveach Channel, near Main Ship Channel	Lat 40 31 26	Long 74 02 20	30	Ebb	19.0	16	5.29	94
625	11.25	Sveach Channel, 300 feet northeast of buoy C 3	Lat 40 30 50	Long 74 01 45	1	Ebb	19.5	16	5.20	93
626	11.30	Sveach Channel, 300 feet northeast of buoy C 3	Lat 40 30 50	Long 74 01 45	20	Ebb	19.0	16	5.59	100
627	11.47	Sveach Channel, 500 feet south of Rorer Shoals light	Lat 40 30 45	Long 74 00 45	1	Ebb	19.5	15	4.91	88
628	11.50	Sveach Channel, 500 feet south of Rorer Shoals light	Lat 40 30 45	Long 74 00 45	30	Ebb	19.0	16	5.00	89
629	1.00	Sveach Channel, 500 feet south of buoy B 3	Lat 40 30 00	Long 74 00 45	1	Ebb	19.5	16	5.49	98
630	1.05	Sveach Channel, 500 feet south of buoy B 3	Lat 40 30 00	Long 73 59 45	30	Ebb	19.0	16	5.59	100
631	1.20	Sveach Channel, 500 feet north of buoy C 1	Lat 40 29 45	Long 74 00 30	1	Ebb	19.5	16	5.20	93
632	1.25	Sveach Channel, 500 feet north of buoy C 1	Lat 40 29 45	Long 74 00 30	25	Ebb	19.0	16	5.29	94
633	1.45	Rorer Shoals, 500 feet northeast of buoy B 2	Lat 40 29 50	Long 73 59 30	1	Ebb	19.5	16	5.29	94
634	1.50	Rorer Shoals, 500 feet northeast of buoy B 2	Lat 40 29 50	Long 73 59 30	25	Ebb	19.0	16	5.48	97

Simplified Cargen. Lower Bay. (Continued). September 14, 1909.

Sample No.	Hour P.M.	Location of Sample	Approximate	Exact	Feet below surface	Tidal current	Temp. water	Per cent wind	Oxygen	
									per cent	per saturation
635	2.05	500 feet southeast of buoy A C 9, Ambrose Channel	Lat 40 30 45 Long 73 59 45	1	Sub	19.8	16	5.20	93	
636	2.10	500 feet southeast of buoy A C 9, Ambrose Channel	Lat 40 30 45 Long 73 59 45	20	Sub	19.0	16	5.29	94	
637	2.15	500 feet northeast of buoy A C 10, Ambrose Channel	Lat 40 31 00 Long 73 58 55	1	Sub	19.8	16	5.00	89	
638	2.20	500 feet northeast of buoy A C 10, Ambrose Channel	Lat 40 31 00 Long 73 58 55	25	Sub	19.0	16	5.12	92	
639	2.45	One third of distance between buoy A C 8 and Manhattan Beach	Lat 40 32 05 Long 73 57 40	1	Sub	19.8	16	5.12	92	
640	2.50	One third of distance between buoy A C 8 and Manhattan Beach	Lat 40 32 05 Long 73 57 40	20	Sub	19.0	16	5.29	94	
641	3.10	Two thirds of distance between buoy A C 8 and Manhattan Beach	Lat 40 33 05 Long 73 57 25	1	Sub	19.8	16	4.91	89	
642	3.15	Two thirds of distance between buoy A C 8 and Manhattan Beach	Lat 40 33 05 Long 73 57 25	25	Sub	19.0	16	5.12	92	

Ex. 51. p. 67

Dissolved Oxygen.

Passaic River, Newark Bay, and Kill van Kull.

September 18, 1909.

Low water occurred at Governors Island at 2.55 p.m. The wind was southeast, with a velocity of 20 miles per hour.

Sample No.	Hour P.M.	Location of Sample		Feet below surface	Title Temp. our- rent	Per- cent Deg.C	Oxygen	
		Approximate	Exact				U. S. Per cent	water litre liter
643	12.40	Passaic River, near foot of N. J. R. R. Ave., Newark	Lat 40 44 49 Long 74 09 56	1	8bb	22.0	52	0
644	12.45	Passaic River, near foot of N. J. R. R. Ave., Newark	Lat 40 44 49 Long 74 09 56	10	8bb	21.5	52	0
645	1.05	Passaic River, near F. R. R. Freight bridge, below Newark	Lat 40 44 10 Long 74 09 45	1	8bb	22.0	52	1.46
646	1.08	Passaic River, near F. R. R. Freight bridge, below Newark	Lat 40 44 10 Long 74 09 45	10	8bb	21.5	52	1.16
647	1.25	Passaic River, near mouth	Lat 40 43 15 Long 74 07 20	1	8bb	21.0	52	2.60
648	1.30	Passaic River, near mouth	Lat 40 43 15 Long 74 07 20	10	8bb	20.5	52	2.73
649	1.45	Newark Bay, near Lehigh Valley R. R. bridge	Lat 40 41 56 Long 74 07 15	1	8bb	20.0	52	3.76
650	1.50	Newark Bay, near Lehigh Valley R. R. bridge	Lat 40 41 56 Long 74 07 15	20	8bb	19.5	52	2.91
651	2.05	Newark Bay, near bell-buoy off Centerville	Lat 40 40 15 Long 74 06 10	1	8bb	20.0	52	4.04
652	2.08	Newark Bay, near bell-buoy off Centerville	Lat 40 40 15 Long 74 06 10	20	8bb	20.0	52	4.22
653	2.15	Newark Bay, near C. R. R. of N. J. drawbridge	Lat 40 39 17 Long 74 06 46	1	8bb	20.0	52	4.04
654	2.18	Newark Bay, near C. R. R. of N. J. drawbridge	Lat 40 39 17 Long 74 06 46	20	8bb	19.0	52	4.22
655	2.25	Kill van Kull, West end	Lat 40 36 48 Long 74 06 45	1	8bb	20.0	52	4.34
656	2.37	Kill van Kull, West End	Lat 40 35 45 Long 74 06 45	20	8bb	19.5	52	4.41

Dissolved Oxygen. Passaic River, Newark Bay and Kill Van Kull.
(Continued.) September 18, 1909.

Sample No.	Hour p.m.	Location of Sample	Approximate	Heath a	Feet below surface	Tidal current	Temp. water Deg. C	Percent land water	Oxygen	
									U.C.	Percent per saturation
657	2.20	Kill van Kull, west end		Lat 40 29 35 Long 74 06 48	35	ebb	19.0	25	4.82	78
658	2.45	Kill van Kull, off Sailors Snug Harbor		Lat 40 28 50 Long 74 06 26	1	ebb	20.0	22	4.04	71
659	2.45	Kill van Kull, off Seilers Snug Harbor		Lat 40 28 50 Long 74 06 26	30	ebb	19.5	23	4.22	74
660	2.45	Kill van Kull, off Con- stable Hook		Lat 40 29 05 Long 74 06 15	1	ebb	20.0	25	4.34	76
661	2.47	Kill van Kull, off Con- stable Hook		Lat 40 29 05 Long 74 06 15	20	ebb	19.5	24	4.41	78
662	3.00	Kill van Kull, off Con- stable Hook		Lat 40 29 05 Long 74 06 15	40	ebb	19.0	26	4.62	92

Ex. 51. p. 60

Dissolved Oxygen.

Arthur Kill. September 16, 1920.

Low water occurred at Governors Island at 3.27 P.M. The wind was southeast, with a velocity of 8 miles per hour.

Sample No.	Hour a.m.	Approximate Location of Sample	Depth		Feet below surface	Tidal Temp.		Percent car-water per cubic meter	Percent Dissolved Oxygen	
			ft.	in.		Surf.	at depth		by volume	by weight
663	11.55	Hahsey River, 1 1/2 mile from mouth	Lat 40 25 55		1	82b	80.0	64	3.47	80
			Long 74 12 45							
664	11.57	Hahsey River, 1 1/2 mile from mouth	Lat 40 25 55		8	82b	19.5	64	3.61	60
			Long 74 12 45							
665	12.25	Arthur Kill, opposite mouth of Hahsey River	Lat 40 25 25		1	82b	20.0	59	3.76	66
			Long 74 12 15							
666	12.30	Arthur Kill, opposite mouth of Hahsey River	Lat 40 25 25		10	82b	19.5	59	3.92	69
			Long 74 12 15							
667	1.05	Arthur Kill, off Fresh Kill	Lat 40 24 45		1	82b	20.0	59	4.04	71
			Long 74 12 35							
668	1.10	Arthur Kill, off Fresh Kill	Lat 40 24 45		15	82b	19.5	59	4.34	76
			Long 74 12 25							
669	1.20	Arthur Kill, near buoy B A off Snaking Point	Lat 40 23 20		1	82b	19.0	58	4.04	70
			Long 74 12 40							
670	1.25	Arthur Kill, near buoy B A off Snaking Point	Lat 40 23 20		25	82b	19.5	55	4.32	77
			Long 74 12 40							
671	2.00	Arthur Kill, near buoy B B, north of Hahsey River	Lat 40 26 45		1	82b	19.5	58	4.41	79
			Long 74 11 05							
672	2.05	Arthur Kill, near buoy B B, north of Hahsey River	Lat 40 26 45		12	82b	19.5	59	4.32	79
			Long 74 12 05							
673	2.25	Arthur Kill, 1000 feet west of Elizabethport drawbridge	Lat 40 29 10		1	82b	19.5	59	3.47	60
			Long 74 11 55							
674	2.35	Arthur Kill, 1000 feet west of Elizabethport drawbridge	Lat 40 29 10		12	82b	19.5	58	4.22	75
			Long 74 11 55							
675	2.50	Arthur Kill, 1000 feet west of Elizabethport drawbridge	Lat 40 28 20		1	82b	19.5	59	3.76	66
			Long 74 11 45							
676	2.55	Arthur Kill, 1000 feet west of Elizabethport drawbridge	Lat 40 28 20		15	82b	19.0	59	4.34	76
			Long 74 11 45							

Sample No.	Hour p.m.	Location of Sample	Approximate	Depth fathoms	Tidal current	Temp. water, Deg. C	Percent water	Oxygen per liter	Oxygen per liter
677	3.08	Arthur Kill, near buoy S 4, at east end	Lat 40 38 40 Long 74 10 45	1	ebb	19.0	87	4.41	79
678	3.07	Arthur Kill, near buoy S 4, at east end	Lat 40 38 45 Long 74 10 45	10	ebb	19.0	88	4.80	79
679	3.17	Midway between Shooters Island and Marinore Harbor	Lat 40 38 25 Long 74 09 30	1	ebb	19.0	88	4.41	79
680	3.20	Midway between Shooters Island and Marinore Harbor	Lat 40 38 30 Long 74 09 30	70	ebb	19.0	88	4.84	79
681	3.26	Mill van Kull, west end	Lat 40 38 35 Long 74 09 45	1	ebb	19.0	88	4.84	79
682	3.40	Mill van Kull, west end	Lat 40 38 35 Long 74 09 45	35	ebb	19.0	88	4.84	79

Ex. 31, p. 73

Disolved Canyon. Jamaica Bay. September 19, 1909.

Low water occurred at Governors Island at 4.47 p.m. The wind was northwest, with a velocity of 8 miles per hour.

Sample No.	Hour a.m.	Approximate Location of Sample	Depth f.	Feet below surface	Side of buoy	Temp. water temp. 20-c. below	Per- cent land salin.	Oxygen	
								C.C. per liter	Percent dissolved
682	10.40	Jamaica Bay, near Lead Horse Creek	Lat 40 34 25 Long 73 54 25	1	58b	19.5	20	4.24	79
684	10.45	Jamaica Bay, near Lead Horse Creek	Lat 40 34 25 Long 73 54 25	1b	58b	19.0	20	4.02	65
686	11.00	Jamaica Bay, 250 feet off Governors Island	Lat 40 34 40 Long 73 53 00	1	58b	19.5	20	4.34	79
688	11.05	Jamaica Bay, 250 feet off Governors Island	Lat 40 34 40 Long 73 53 00	10	58b	19.0	20	4.02	61
689	11.08	Just north of Ruffle Bar	Lat 40 35 40 Long 73 51 25	5	58b	19.0	20	1.52	68
690	11.20	Just south of Ruffle Bar	Lat 40 35 40 Long 73 51 25	11	58b	19.0	20	3.12	54
692	11.30	About 1 mile off Canarsie breakwater	Lat 40 36 45 Long 73 52 25	1	58b	19.5	20	4.04	72
690	11.35	About 1 mile off Canarsie breakwater	Lat 40 36 45 Long 73 52 25	9	58b	19.0	20	1.82	61
691	12.10	200 feet off Canarsie light	Lat 40 37 20 Long 73 52 45	1	58b	19.5	20	3.76	67
694	12.12	200 feet off Canarsie light	Lat 40 37 20 Long 73 52 45	10	58b	19.5	20	3.91	70
693	1.00	200 feet off Canarsie light	Lat 40 37 40 Long 73 53 10	1	60b	19.5	20	3.57	68
696	1.05	200 feet off Canarsie light	Lat 40 37 40 Long 73 53 10	8	60b	19.5	20	3.61	68
697	2.00	1000 feet off mouth of Fresh Creek	Lat 40 38 20 Long 73 52 15	1	60b	19.5	20	3.44	86
698	2.15	1000 feet off mouth of Fresh Creek	Lat 40 38 20 Long 73 52 15	1	60b	19.5	20	5.09	11

THE STATE OF NEW JERSEY ET AL.

Figure 1

Sample No.	Deep Fms.	Location of Sample Approximate	Depth Fath.	Temp. Surf.	Temp. at 100 Fath.	Temp. at 200 Fath.	Temp. at 300 Fath.	Temp. at 400 Fath.	Temp. at 500 Fath.	Temp. at 600 Fath.	Temp. at 700 Fath.	Temp. at 800 Fath.	Temp. at 900 Fath.	Temp. at 1000 Fath.	Temp. at 1100 Fath.	Temp. at 1200 Fath.	Temp. at 1300 Fath.	Temp. at 1400 Fath.	Temp. at 1500 Fath.	Temp. at 1600 Fath.	Temp. at 1700 Fath.	Temp. at 1800 Fath.	Temp. at 1900 Fath.	Temp. at 2000 Fath.	Temp. at 2100 Fath.	Temp. at 2200 Fath.	Temp. at 2300 Fath.	Temp. at 2400 Fath.	Temp. at 2500 Fath.	Temp. at 2600 Fath.	Temp. at 2700 Fath.	Temp. at 2800 Fath.	Temp. at 2900 Fath.	Temp. at 3000 Fath.	Temp. at 3100 Fath.	Temp. at 3200 Fath.	Temp. at 3300 Fath.	Temp. at 3400 Fath.	Temp. at 3500 Fath.	Temp. at 3600 Fath.	Temp. at 3700 Fath.	Temp. at 3800 Fath.	Temp. at 3900 Fath.	Temp. at 4000 Fath.	Temp. at 4100 Fath.	Temp. at 4200 Fath.	Temp. at 4300 Fath.	Temp. at 4400 Fath.	Temp. at 4500 Fath.	Temp. at 4600 Fath.	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Temp. at 52000 Fath.	Temp. at 52100 Fath.	Temp. at 52200 Fath.	Temp. at 52300 Fath.	Temp. at 52400 Fath.	Temp. at 52500 Fath.	Temp. at 52600 Fath.	Temp. at 52700 Fath.	Temp. at 52800 Fath.	Temp. at 52900 Fath.	Temp. at 53000 Fath.	Temp. at 53100 Fath.	Temp. at 53200 Fath.	Temp. at 53300 Fath.	Temp. at 53400 Fath.	Temp. at 53500 Fath.	Temp. at 53600 Fath.	Temp. at 53700 Fath.	Temp. at 53800 Fath.	Temp. at 53900 Fath.	Temp. at 54000 Fath.	Temp. at 54100 Fath.	Temp. at 54200 Fath.	Temp. at 54300 Fath.	Temp. at 54400 Fath.	Temp. at 54500 Fath.	Temp. at 54600 Fath.	Temp. at 54700 Fath.	Temp. at 54800 Fath.	Temp. at 54900 Fath.	Temp. at 55000 Fath.	Temp. at 55100 Fath.	Temp. at 55200 Fath.	Temp. at 55300 Fath.	Temp. at 55400 Fath.	Temp. at 55500 Fath.	Temp. at 55600 Fath.	Temp. at 55700 Fath.	Temp. at 55800 Fath.	Temp. at 55900 Fath.	Temp. at 56000 Fath.	Temp. at 56100 Fath.	Temp. at 56200 Fath.	Temp. at 56300 Fath.	Temp. at 56400 Fath.	Temp. at 56500
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En. 11. p. 72

Hudson River. September 18, 1909.

Dissolved Oxygen.

High water occurred at Governors Island at 10.36 a.m. The wind was south-west, with a velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Sample		Feet below surface	Tidal Temp. out-water rent deg. C	Per- cent water	Oxygen	
		Approximate	Exact				C.C. per litre	Percent saturation
699	10.05	500 feet off C. R. R. of N. J. ferry, Communipaw	Lat 40 42 25 Long 74 02 00	1	Flood 19.5	28	4.34	76
700	10.06	500 feet off C. R. R. of N. J. ferry Communipaw	Lat 40 42 25 Long 74 02 00	40	Flood 18.5	28	4.52	77
701	10.15	500 feet off P. R. R. ferry Jersey City	Lat 40 43 00 Long 74 01 55	1	Flood 19.5	28	4.04	71
702	10.17	500 feet off P. R. R. ferry Jersey City	Lat 40 43 00 Long 74 01 55	20	Flood 19.0	28	4.12	71
703	10.19	500 feet off P. R. R. ferry Jersey City	Lat 40 43 00 Long 74 01 55	40	Flood 18.5	28	4.22	72
704	10.36	500 feet off Lackawanna ferry, Hoboken	Lat 40 43 40 Long 74 01 50	1	Flood 19.5	28	3.76	66
705	10.39	500 feet off Lackawanna ferry, Hoboken	Lat 40 43 40 Long 74 01 50	40	Flood 18.5	28	3.91	66
706	10.50	500 feet off Stevens Point Hoboken	Lat 40 44 40 Long 74 01 20	1	Flood 19.5	28	4.04	71
707	10.52	500 feet off Stevens Point Hoboken	Lat 40 44 40 Long 74 01 20	20	Flood 19.0	28	4.22	75
708	10.55	500 feet off Stevens Point Hoboken	Lat 40 44 40 Long 74 01 20	40	Flood 18.5	28	4.41	75
709	11.25	500 feet off West Shore ferry, Weehawken	Lat 40 46 45 Long 74 00 20	1	Flood 19.5	28	4.12	72
710	11.28	500 feet off West Shore ferry, Weehawken	Lat 40 46 45 Long 74 00 20	40	Flood 18.5	28	4.34	74

Ex. 31. P. 74

Low water occurred at Governors Island at 8.27 p.m. The wind was southeasterly, with a velocity of 40 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Feet		Tidal Temp. current	Per-cent water	Deg. Cent	Per-cent saturation	Oxygen per litre
			Exact	below surface					
711	11.55	500 feet southwest of West Bank light	Lat 40 32 10 Long 74 02 40	1	Flood	19.0	8	5.20	95
712	11.58	500 feet southwest of West Bank light	Lat 40 32 10 Long 74 02 40	20	Flood	18.5	8	5.72	102
713	12.20	About 1 mile from West Bank light, on line with Port Monmouth	Lat 40 31 25 Long 74 03 00	1	Flood	19.0	9	5.20	95
714	12.22	About 1 mile from West Bank light, on line with Port Monmouth	Lat 40 31 25 Long 74 03 00	20	Flood	13.5	8	5.72	102
715	1.00	Near white buoy 8 on same line	Lat 40 30 20 Long 73 03 15	1	Flood	19.0	8	5.20	95
716	1.05	Near white buoy 8 on same line	Lat 40 30 20 Long 73 03 15	20	Flood	18.5	8	5.42	97
717	1.20	Farther south on same line	Lat 40 29 35 Long 74 03 25	1	Flood	19.0	8	5.00	91
718	1.25	Farther south on same line	Lat 40 29 35 Long 74 03 25	20	Flood	18.5	8	5.42	97
719	1.40	Farther south on same line near buoy C 1	Lat 40 28 35 Long 74 03 15	1	Flood	19.0	9	5.20	95
720	1.43	Farther south on same line near buoy C 1	Lat 40 28 35 Long 74 03 15	25	Flood	18.5	8	5.42	97
721	2.00	Farther south on same line	Lat 40 27 40 Long 74 02 40	1	Flood	19.0	9	4.91	90
722	2.03	Farther south on same line	Lat 40 27 40 Long 74 02 40	20	Flood	18.5	8	5.12	92
723	2.20	About 1 mile off Atlantic Highlands	Lat 40 26 25 Long 74 03 15	1	Flood	18.5	8	4.91	88

Br. Sl. 7.75

Lower Bay. (Continued.) September 20, 1909.

Dissolved Oxygen.

Sample No.	Hour P.M.	Location of Samples	Exact	Feet below surface	Tidal current	Temp. water	Per cent air-saturation	Oxygen per cubic foot	Oxygen per cent saturation
724	2.23	About 1 mile off Atlantic Highlands	Lat 40 26 25 Long 74 03 15	20	Flood	19.5	8	5.12	92
725	2.40	About 1 1/2 mile off Atlantic Highlands	Lat 40 26 50 Long 74 03 28	1	Ebb	19.0	8	4.91	90
726	2.43	About 1 1/2 mile off Atlantic Highlands	Lat 40 26 50 Long 74 03 25	18	Ebb	19.5	8	5.00	89
727	3.40	2000 feet west of buoy S 1 W.	Lat 40 29 00 Long 74 07 50	1	Ebb	19.0	8	5.79	104
728	3.42	2000 feet west of buoy S 1 W.	Lat 40 29 00 Long 74 07 50	12	Ebb	18.5	8	6.20	110
729	4.00	Nearer Great Kills	Lat 40 29 50 Long 74 07 40	1	Ebb	19.0	8	6.07	109
730	4.02	Nearer Great Kills	Lat 40 29 50 Long 74 07 40	25	Ebb	18.5	8	6.02	108
731	4.20	1 1/2 miles south of Great Kills	Lat 40 30 25 Long 74 07 40	1	Ebb	19.0	8	5.79	104
732	4.23	1 1/2 miles south of Great Kills	Lat 40 30 25 Long 74 07 40	15	Ebb	19.5	8	6.02	109
733	4.32	1 mile south of Great Kills	Lat 40 31 10 Long 74 07 45	1	Ebb	19.0	8	5.79	104
734	4.35	1 mile south of Great Kills	Lat 40 31 10 Long 74 07 45	10	Ebb	18.5	8	6.02	109

Ex. 31. p. 76

Discolored oxygen.
 Baritan Bay. Depth 1000 fms. 1000 fms.
 Low water occurred at Governors Island at 6.52 p.m. The wind was southeast, with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Tidal Temp. air-water	Per cent land water	Oxygen C.C. percent per saturation
		Approximate	Exact 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24			
735	11.45	Baritan Bay, 1000 feet east of buoy S 2, off Seguine Point	Lat 40 30 30 Long 74 01 05	Flood 19.0	8	6.07 110
736	11.47	Baritan Bay, 1000 feet east of p.m. buoy S 3, off Seguine Point	Lat 40 30 30 Long 74 01 05	Flood 18.5	8	6.20 110
737	12.05	Near buoy S 3 in Seguine Channel	Lat 40 30 30 Long 74 11 25	Flood 19.0	8	6.07 110
738	12.07	Near buoy S 3 in Seguine Channel	Lat 40 30 30 Long 74 11 25	Flood 18.5	8	6.20 110
739	12.20	1000 feet southeast of Princes Bay light	Lat 40 30 20 Long 74 12 35	Flood 19.0	8	6.07 110
740	12.22	1000 feet southeast of Princes Bay light	Lat 40 30 20 Long 74 12 35	Flood 18.5	8	6.17 110
741	12.30	Near red buoy S 6	Lat 40 29 45 Long 74 13 35	Flood 19.0	8	6.00 109
742	12.32	Near red buoy S 6	Lat 40 29 45 Long 74 13 35	Flood 18.5	8	6.19 110
743	12.45	Near red buoy S 8	Lat 40 29 05 Long 74 14 20	Flood 19.0	8	6.00 109
744	12.47	Near red buoy S 8	Lat 40 29 05 Long 74 14 20	Flood 18.5	8	6.19 110
745	1.00	500 feet north of Great Bede light	Lat 40 29 15 Long 74 15 15	Flood 19.0	8	5.79 105
746	1.05	500 feet north of Great Bede light	Lat 40 29 15 Long 74 15 15	Flood 18.5	8	6.03 108

Ex. 31. p. 77

Resolved Oxygen.

Arthur Kill. September 21, 1909.

Low water occurred at Governors Island at 6.52 p.m. The wind was southeast, with a velocity of 5 miles per hour.

Sample No.	Hour P.m.	Location of Samples		Exact O. " surface	Feet below surface	Tidal temp. cur- rent	Temp. water Deg. C	Per- cent land water	Oxygen C.C. per litre	Percent saturation
		Approximate								
747	1.20	Lower end of Kill. 200 feet west of buoy S	Lat 40 30 10 Long 74 15 40	1	Flood	19.0	8	5.79	105	
748	1.25	Lower end of Kill. 200 feet west of buoy S	Lat 40 30 10 Long 74 15 40	30	Flood	18.5	8	6.02	106	
749	1.40	Off Tottenville, 200 feet west of buoy S	Lat 40 30 55 Long 74 15 15	1	Flood	19.0	8	5.40	100	
750	1.45	Off Tottenville, 200 feet west of buoy S	Lat 40 30 55 Long 74 15 15	45	Flood	18.0	8	5.72	102	
751	2.15	Off Smoking Point, 200 feet east of buoy S A	Lat 40 33 30 Long 74 13 50	1	Flood	19.0	8	5.49	100	
752	2.17	Off Smoking Point, east of buoy S A	Lat 40 33 50 Long 74 13 50	30	Flood	18.5	8	5.72	102	
753	2.35	Off Fresh Kill	Lat 40 34 20 Long 74 12 40	1	Flood	19.0	8	5.20	98	
754	2.40	Off Fresh Kill	Lat 40 34 20 Long 74 12 40	26	Flood	18.5	8	5.42	97	

Ex. 31. p. 79

Dissolved Oxygen.

Kill van Kull, Upper Bay and East River.

September 22, 1909.

High water occurred at Governors Island at 2.20 p.m. The wind was southwest, with a velocity of 10 miles per hour.

Sample No.	Hour S.M.	Location of Samples	Approximate	Exact	Feet below surface	Tidal Temp. our water cent Deg. C	Per-cent water	C.C. Per cent	Oxygen
755	11.10	West end of Kill van Kull, near buoy S 2		Lat 40 38 30 Long 74 08 30	1	Flood 16.5	20	3.76	66
756	11.12	West end of Kill van Kull, near buoy S 2		Lat 40 38 30 Long 74 08 30	40	Flood 18.0	20	4.82	79
757	11.30	Kill van Kull off Livingston station		Lat 40 39 45 Long 74 06 50	1	Flood 19.5	30	4.34	76
758	11.32	Kill van Kull, off Livingston station		Lat 40 39 45 Long 74 06 50	20	Flood 18.0	20	4.41	75
759	11.36	Kill van Kull, off Livingston station		Lat 40 39 45 Long 74 06 50	40	Flood 16.0	20	4.82	83
760	12.20	East end of Kill van Kull, off Constable Hook		Lat 40 39 05 Long 74 05 15	1	Flood 18.5	20	4.62	81
761	12.26	East end of Kill van Kull, off Constable Hook		Lat 40 39 05 Long 74 05 15	40	Flood 16.0	30	4.82	93
762	12.50	Upper Bay, near Robbins Reef bell-buoy		Lat 40 39 15 Long 74 03 50	1	Flood 16.5	20	4.91	96
763	12.52	Upper Bay, near Robbins Reef bell-buoy		Lat 40 39 15 Long 74 03 50	20	Flood 18.0	20	5.00	96
764	12.56	Upper Bay, near Robbins Reef bell-buoy		Lat 40 39 15 Long 74 03 50	40	Flood 18.0	30	5.12	89
765	1.05	Upper Bay, near buoy G 2		Lat 40 40 10 Long 74 03 12	1	Flood 18.5	30	4.77	84
766	1.07	Upper Bay, near buoy G 2		Lat 40 40 10 Long 74 03 12	40	Flood 18.0	20	5.00	95
767	1.15	Upper Bay, near buoy S 2, off Liberty Island		Lat 40 41 05 Long 74 02 40	1	Flood 18.5	20	4.34	76

Ex. 31. p. 79

Kill van Kull, Upper Bay and East River. (Continued.)

Dissolved Oxygen.

September 22, 1909.

Sample No.	Hour P.M.	Location of Samples		Kraut 0	Feet below surface	Tidal current	Temp. air- water Deg.C	Per- cent land water	Oxygen	
		Approximate							C.C.	Percent per saturation
768	1.17	Upper Bay, near buoy S 2, off Liberty Island	Lat 40 41 05 Long 74 02 40	40	20	Flood	15.0	20	4.41	76
769	1.18	Upper Bay, near buoy S 2, off Liberty Island	Lat 40 41 05 Long 74 02 40	40	20	Flood	16.0	20	4.52	78
770	1.25	East River, between Governors Island and Battery	Lat 40 41 50 Long 74 01 00	1	1	Flood	16.5	20	4.19	74
771	1.27	East River, between Governors Island and Battery	Lat 40 41 50 Long 74 01 00	40	40	Flood	16.0	20	4.27	74
772	1.35	East River, midstream, at Brooklyn bridge	Lat 40 42 20 Long 73 59 48	1	1	Flood	16.5	20	4.04	71
773	1.37	East River, midstream, at Brooklyn bridge	Lat 40 42 20 Long 73 59 48	20	20	Flood	16.0	20	4.12	71
774	1.40	East River, midstream, at Brooklyn bridge	Lat 40 42 20 Long 73 59 48	40	40	Flood	16.0	20	4.22	73
775	1.50	East River, midstream, at Manhattan bridge	Lat 40 42 25 Long 73 59 25	1	1	Flood	16.5	20	3.76	66
776	1.52	East River, midstream, at Manhattan bridge	Lat 40 42 25 Long 73 59 25	40	40	Flood	16.0	20	3.92	68

Ex. 31. P. 80

Dissolved Oxygen. Upper Bay. September 30, 1909.
 Low water occurred at Governors Island at 5.19 p.m. The wind was northwest with a
 velocity of 30 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Exact depth	Tidal range	Temp. air-	Temp. water	Per- cent saturation	Oxygen C.C. per liter
		Approximate								
777	10.37	Upper Bay, 800 feet off Battery	Lat 40 42 10 Long 74 01 10	1	ebb	10.5	59	4.62	70	
778	10.50	Upper Bay, 800 feet off Battery	Lat 40 42 10 Long 74 01 10	40	ebb	10.0	58	4.92	62	
779	10.55	Upper Bay, 800 feet west of Governors Island	Lat 40 41 55 Long 74 01 15	1	ebb	10.5	58	4.62	70	
780	10.54	Upper Bay, 800 feet west of Governors Island	Lat 40 41 35 Long 74 01 15	20	ebb	10.0	59	4.71	60	
781	10.54	Upper Bay, 800 feet west of Governors Island	Lat 40 41 35 Long 74 01 15	40	ebb	10.0	59	5.12	67	
782	11.55	Upper Bay, near buoy G 2	Lat 40 40 10 Long 74 03 12	1	ebb	10.5	59	4.91	64	
783	11.57	Upper Bay, near buoy G 2	Lat 40 40 10 Long 74 03 12	40	ebb	10.0	59	5.12	67	
784	12.07	Upper Bay, 1000 feet west of Robbins Reef light	Lat 40 39 25 Long 74 03 45	1	ebb	10.5	58	4.91	64	
785	12.10	Upper Bay, 1000 feet west of Robbins Reef light	Lat 40 39 25 Long 74 03 45	20	ebb	10.0	58	5.12	67	

Ex. 21, p. 61

Dissolved Oxygen.

Kill van Kull. September 30, 1909.

Low water occurred at Coney Island at 3.19 p.m. The wind was northwest, with a velocity of 30 miles per hour.

Sample No.	Hour P.M.	Location of Sample	Knots	Feet below surface	Tidal current	Temp. water	Per cent dissolved	Oxygen	
								N.C.	Percent saturation
786	12.20	Kill van Kull, east end.	Lat 40 39 06 Long 74 06 16	1	Ebb	19.5	29	4.62	79
787	12.22	Kill van Kull, east end	Lat 40 39 06 Long 74 06 16	30	Ebb	19.0	28	4.71	80
788	12.25	Kill van Kull, east end	Lat 40 39 06 Long 74 06 16	40	Ebb	19.0	28	5.12	87
789	12.35	Kill van Kull, off Sailors Snag Harbor	Lat 40 39 50 Long 74 06 07	1	Ebb	19.5	29	4.34	74
790	12.36	Kill van Kull, off Sailors Snag Harbor	Lat 40 39 50 Long 74 06 07	40	Ebb	19.0	28	4.52	77
791	1.05	Kill van Kull, off Port Richmond	Lat 40 39 36 Long 74 07 52	1	Ebb	19.5	29	4.04	69
792	10.7	Kill van Kull, off Port Richmond	Lat 40 39 36 Long 74 07 52	30	Ebb	19.0	28	4.12	70
793	1.09	Kill van Kull, off Port Richmond	Lat 40 39 36 Long 74 07 52	40	Ebb	19.0	29	4.28	72
794	2.40	Kill van Kull, west end	Lat 40 39 30 Long 74 08 30	1	Ebb	19.5	29	4.04	69
795	2.43	Kill van Kull, west end	Lat 40 39 30 Long 74 08 30	40	Ebb	19.0	29	4.32	72

Dr. H. P. 52

High water occurred at Governors Island at 9.23 a.m. The wind was north-east, with a velocity of 40 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Exact time	Feet below surface	Tidal current	Temp. water	Per cent per litre	Oxygen
		Approximate							
796	9.50	500 feet off Pier 32, Brooklyn	Lat 40 41 10 Long 74 00 30	1	Flood	19.0	58	4.62	78
797	9.52	500 feet off Pier 32, Brooklyn	Lat 40 41 10 Long 74 00 30	40	Flood	16.0	29	4.82	82
798	10.00	At Brooklyn bridge, 500 feet off Brooklyn shore	Lat 40 42 15 Long 73 59 45	1	Flood	18.0	19	4.49	76
799	10.02	At Brooklyn bridge, 800 feet off Brooklyn shore	Lat 40 42 15 Long 73 59 45	20	Flood	18.0	28	4.87	77
800	10.04	At Brooklyn bridge, 500 feet off Brooklyn shore	Lat 40 42 15 Long 73 59 45	40	Flood	18.0	20	4.82	82
801	10.16	At Williamsburg bridge, 500 feet off Brooklyn shore	Lat 40 42 48 Long 73 59 10	1	Flood	18.0	28	4.34	74
802	10.18	At Williamsburg bridge, 800 feet off Brooklyn shore	Lat 40 42 48 Long 73 59 10	60	Flood	19.0	23	4.82	77
803	10.30	Opposite East 34 St., 500 feet off Brooklyn shore	Lat 40 44 20 Long 73 57 48	1	Flood	19.0	26	3.76	64
804	10.31	Opposite East 34 St., 800 feet off Brooklyn shore	Lat 40 44 20 Long 73 57 48	20	Flood	19.0	28	4.13	70
805	10.38	Opposite East 34 St., 500 feet off Brooklyn shore	Lat 40 44 20 Long 73 57 48	40	Flood	19.0	28	4.22	72
806	10.50	At Queensboro bridge, east channel	Lat 40 46 20 Long 73 57 10	1	Flood	16.0	20	4.34	76
807	10.52	At Queensboro bridge, east channel	Lat 40 45 20 Long 73 57 10	40	Flood	16.0	28	4.52	77
808	11.06	At Hall Gate	Lat 40 46 50 Long 73 56 00	1	Flood	16.0	26	4.34	74
809	11.06	At Hall Gate	Lat 40 46 50 Long 73 56 00	20	Flood	16.0	26	4.41	78
810	11.06	At Hall Gate	Lat 40 46 50 Long 73 56 00	40	Flood	16.0	26	4.82	82

Ex. 31. p. 63

Dissolved Oxygen.

Long Island Sound, October 1, 1909.

Low water occurred at Governors Island at 4.07 p.m. The wind was north-west, with a velocity of 40 miles per hour. The current was flowing westward.

Sample No.	Hour p.m.	Location of Sample		Feet below surface	Tidal current	Temp. water Deg.-C	Per- cent land water	Oxygen per volume water at 15°C.
		Approximate	Exact					
811	1.30	Long Island Sound, near Throgs Neck	Lat 40 43 30 Long 73 47 30	1	Ebb	18.0	20	8.79
812	1.32	Long Island Sound, near Throgs Neck	Lat 40 43 30 Long 73 47 30	25	Ebb	18.0	20	8.89
813	1.34	Long Island Sound, near Throgs Neck	Lat 40 43 30 Long 73 47 30	80	Ebb	18.0	20	8.08

No. 31. p. 66

Resolved (Supreme Court).
 Sea water occurred at Governors Island at 4.07 p.m. The wind was north-west, with a velocity of 40 miles per hour.

Sample No.	Hour p.m.	Location of Sample	Approximate	Height in feet	Feet below surface	Tidal range	Temp. of water	Per cent salt	Per cent salinity
814	1.00	East River, between North and South Brothers Island	Lat 40 47 50 Long 73 53 55	1	800	19.0	80	4.01	80
815	1.07	East River, between North and South Brothers Island	Lat 40 47 55 Long 73 53 55	40	805	10.0	80	3.12	87
816	2.10	Midstream, off East 116 St., Harlem River	Lat 40 47 20 Long 73 55 50	1	805	10.5	80	2.76	64
817	2.18	Midstream, off East 116 St., Harlem River	Lat 40 47 20 Long 73 55 50	80	805	10.5	80	3.02	86
818	2.28	Midstream, off East 110 St., Harlem River	Lat 40 47 20 Long 73 56 05	1	805	10.5	80	3.76	84
819	2.37	Midstream, off East 110 St., Harlem River	Lat 40 47 20 Long 73 56 05	80	805	10.5	80	3.92	85
820	2.55	Wall Gate, off East 90 St., East River	Lat 40 46 40 Long 73 56 20	1	805	10.0	80	4.62	79
821	2.56	Wall Gate, off East 90 St., East River	Lat 40 46 40 Long 73 56 20	80	805	10.0	80	4.71	80
822	2.58	Wall Gate, off East 90 St., East River	Lat 40 46 40 Long 73 56 20	40	805	10.0	80	4.02	82
823	2.47	At Queensboro bridge, west channel, East River	Lat 40 45 20 Long 73 57 30	1	805	10.0	80	4.34	74
824	2.50	At Queensboro bridge, west channel, East River	Lat 40 45 20 Long 73 57 30	40	805	10.0	80	4.62	82
825	3.00	1000 feet off mouth of Harlem Creek, East River	Lat 40 44 10 Long 73 57 50	1	805	10.5	80	3.10	84
826	3.10	1000 feet off mouth of Harlem Creek, East River	Lat 40 44 10 Long 73 57 50	80	805	10.0	80	3.61	83

See, also, p. 85

Discolored Organ.

East River and Saginaw River. (Continued.)

October 1, 1909.

Sample No.	Hour p.m.	Location of Sample		Depth, f.	No. below surface	Tidal stage, our. rent	Per-centage of land	Per-centage of water	Per-centage of silt
		Approximate	Exact						
887	3.20	1000 feet off Wallabout Bay.	Lat 40 42 25 Long 73 59 30	1	800	13.5	29	5.47	50
888	3.30	1000 feet off Wallabout Bay.	Lat 40 41 25 Long 73 59 30	10	800	10.0	20	3.52	66
889	3.30	1000 feet off Wallabout Bay.	Lat 40 42 25 Long 73 59 30	40	800	10.0	20	4.22	72

Sa. 33. p. 86

measured (approx.)
 High water measured at Governors Island at 10.30 a.m. The wind was west, with a
 velocity of 80 miles per hour.

Sample No.	Approximate	Depth in feet	Feet below surface	Tidal Temp. Per cent water open	Per cent water open	Per cent water open
Inletting of Manhattan						
820	9.00 500 feet off Pier 4, Manhattan	Lat 40 42 00	1	Flood	17.0	29 4.41 75
821	9.01 800 feet off Pier 4, Manhattan	Lat 40 42 00	20	Flood	17.0	29 4.71 79
822	9.02 500 feet off Pier 4, Manhattan	Lat 40 42 00	40	Flood	17.0	29 4.82 81
823	9.03 At Brooklyn bridge, 500 feet off Manhattan shore	Lat 40 42 00	1	Flood	17.0	29 4.94 73
824	9.04 At Brooklyn bridge, 500 feet off Manhattan shore	Lat 40 42 00	40	Flood	17.0	29 4.18 79
825	9.05 At Williamsburg bridge, 500 feet off Manhattan shore	Lat 40 42 00	1	Flood	17.0	29 4.04 68
826	9.06 At Williamsburg bridge, 500 feet off Manhattan shore	Lat 40 42 00	20	Flood	17.0	29 4.12 89
827	9.07 At Williamsburg bridge, 500 feet off Manhattan shore	Lat 40 42 00	40	Flood	17.0	29 4.22 73
828	10.10 Opposite East 34 St., 500 feet off shore	Lat 40 42 00	1	Flood	17.0	29 2.90 66
829	10.10 Opposite East 34 St., 500 feet off shore	Lat 40 42 00	40	Flood	17.0	29 4.30 67
830	10.20 At Queensboro bridge, west channel	Lat 40 42 00	1	Flood	17.0	29 4.04 69
831	10.21 At Queensboro bridge, west channel	Lat 40 42 00	20	Flood	17.0	29 4.12 89
832	10.22 At Queensboro bridge, west channel	Lat 40 42 00	40	Flood	17.0	29 4.22 73

Sh. 21, 9-07

Dissolved Oxygen. East River. (Continued.) October 2, 1909.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. Per- cent deg. C land water	Oxygen	
		Approximate	Exact			C.C. percent per litre	saturation
843	10.40	Hell Gate, off East 90 St.	Lat 40 46 30 Long 73 56 20	1	Flood 17.0 28	4.04	68
844	10.41	Hell Gate, off East 90 St.	Lat 40 46 30 Long 73 56 20	20	Flood 17.0 28	4.12	69
845	10.43	Hell Gate, off East 90 St.	Lat 40 46 30 Long 73 56 20	40	Flood 17.0 28	4.52	76

Ex. 31. p. 88

Dissolved Oxygen. Hudson River cross-sections. October 6, 1909.
 High water occurred at Governors Island at 12.41 p.m. The wind was Northwest, with a
 velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current Deg.C	Temp. Deg.C	Per- cent water	Oxygen	
		Approximate	Exact					per litre	saturation
846	10.55	1/5 way across from foot of West 42 St.	Lat 40 45 50 Long 74 00 20	1	Flood	17.0	52	4.91	78
847	10.56	1/5 way across from foot of West 42 St.	Lat 40 45 50 Long 74 00 30	20	Flood	17.0	52	4.00	79
848	10.57	1/5 way across from foot of West 42 St.	Lat 40 45 50 Long 74 00 20	40	Flood	17.0	52	5.12	81
849	11.05	2/5 way across from foot of West 42 St.	Lat 40 45 55 Long 74 00 30	1	Flood	17.0	52	5.20	83
850	11.07	2/5 way across from foot of West 42 St.	Lat 40 45 55 Long 74 00 30	20	Flood	17.0	52	5.29	84
851	11.09	2/5 way across from foot of West 42 St.	Lat 40 45 55 Long 74 00 30	40	Flood	17.0	52	5.42	85
852	11.15	3/4 way across from foot of West 42 St.	Lat 40 46 00 Long 74 00 50	1	Flood	17.0	52	5.49	87
853	11.17	3/4 way across from foot of West 42 St.	Lat 40 46 00 Long 74 00 50	20	Flood	17.0	52	5.59	89
854	11.19	3/4 way across from foot of West 42 St.	Lat 40 46 00 Long 74 00 50	40	Flood	17.0	52	5.72	91
855	12.15	1/5 way across from foot of West 137 St.	Lat 40 49 30 Long 73 57 35	1	Flood	17.0	52	5.20	85
856	12.13	1/5 way across from foot of West 137 St.	Lat 40 49 30 Long 73 57 35	20	Flood	17.0	52	5.29	84
857	12.18	1/5 way across from foot of West 137 St.	Lat 40 49 30 Long 73 57 35	40	Flood	17.0	52	5.42	86
858	12.28	2/5 way across from foot of West 137 St.	Lat 40 49 35 Long 73 57 50	1	Flood	17.0	52	5.50	88
859	12.29	2/5 way across from foot of West 137 St.	Lat 40 49 35 Long 73 57 50	20	Flood	17.0	52	5.29	84
860	12.20	2/5 way across from foot of West 137 St.	Lat 40 49 35 Long 73 57 50	40	Flood	17.0	52	5.42	86

Ex. 31. p. 82

Hudson River Cross-sections. (Continued.)

Dissolved Oxygen.

October 5, 1909.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal height our- rent	Temp. Per- cent water Deg.C	Per- cent land water	Oxygen C.C. per litre saturation
		Approximate	Exact					
861	12.40	3/4 way across from foot of West 137 St.	Lat 40 49 40 Long 73 58 05	1	Flood	17.0	52	5.49
862	12.41	3/4 way across from foot of West 137 St.	Lat 40 49 40 Long 73 58 05	20	Flood	17.0	52	5.59
863	12.43	3/4 way across from foot of West 137 St.	Lat 40 49 40 Long 73 58 05	25	Flood	17.0	52	5.72
864	1.20	500 feet off Inwood.	Lat 40 52 20 Long 73 55 55	1	Flood	17.0	52	5.49
865	1.21	500 feet off Inwood.	Lat 40 52 20 Long 73 55 55	20	Flood	17.0	52	5.59
866	1.23	500 feet off Inwood.	Lat 40 52 20 Long 73 55 55	40	Flood	17.0	52	5.72
867	1.33	1/3 way across from Inwood	Lat 40 52 25 Long 73 56 05	1	Flood	17.0	52	5.49
868	1.34	1/3 way across from Inwood	Lat 40 52 25 Long 73 56 05	20	Flood	17.0	52	5.89
869	1.36	1/3 way across from Inwood	Lat 40 52 25 Long 73 56 05	40	Flood	17.0	52	6.02
870	1.46	2/3 way across from Inwood	Lat 40 52 35 Long 73 56 25	1	Flood	17.0	52	5.79
871	1.47	2/3 way across from Inwood	Lat 40 52 35 Long 73 56 25	20	Flood	17.0	52	5.89
872	1.49	2/3 way across from Inwood.	Lat 40 52 35 Long 73 56 25	25	Flood	17.0	52	6.02

Ex. 31. p.90

COMPLAINANTS' EXHIBIT No. 44. James D. Maher,
Commissioner.

Float Observations.

October 26, 1908.

Dr. George A. Soper, President Metropolitan Sewerage Commission
of N. Y., New York City.

DEAR SIR: I beg to report as follows results of float observations
made in the Harlem River in August and September.

From the N. Y. C. & H. R. R. R. bridge at Spuyten Duyvil to a
point nearly opposite East 125th St. the Harlem River is $6\frac{1}{2}$ miles
long. In round figures the different bridges are the following dis-
tances from the Spuyten Duyvil bridge:

Spuyten Duyvil	Bridge 0	mi.
Broadway (Kingsbridge)	" 1	"
University Heights (207th St.)	" 2	"
Washington (131st St.)	" $3\frac{1}{4}$	"
High	" $3\frac{1}{2}$	"
Putnam (6th Ave.)	" $4\frac{3}{5}$	"
Central (McComb's Lane)	" $4\frac{1}{2}$	"
Lenox Ave. (145th St.)	" $5\frac{1}{8}$	"
Madison Ave. (Mott Haven)	" $5\frac{1}{2}$	"
Park Ave. (N. Y. C. & H. R. R. R.)	" $5\frac{3}{4}$	"
Third " (131st St.)	" 6	"
Second Ave. (129th St.)	" $6\frac{1}{8}$	"
First " (Willis Ave.)	" $6\frac{1}{4}$	"

Data Obtained from Float Observations in the Harlem River.

Float No.	5.	6.	7.	8.	11.	12.	13.	14.	24.
Date, —, 1908.	Aug. 17.	Aug. 18.	Aug. 19.	Aug. 20.	Aug. 25.	Aug. 26.	Aug. 27.	Aug. 28.	Sept. 9.
H. W. G. I.	0.21 P. M.	1.19 P. M.	2.17 P. M.	3.15 P. M.	7.21 A. M.	7.50 A. M.	8.19 A. M.	8.46 A. M.	6.51 A. M.
L. W. G. I.	6.12 A. M.	7.08 A. M.	8.05 A. M.	9.05 A. M.	1.20 P. M.	1.57 P. M.	2.31 P. M.	3.03 P. M.	1.00 P. M.
Records during Flood Current:									
Start—number of miles from Spuyten Duyvil Bridge	0	5¼	0	3¼	.....	.....	.....	.....	.....
Time after L. W. G. I.	2 hr. 31 m.	1 hr. 12 m.	1 hr. 34 m.	1 hr. 39 m.	.....	.....	.....	.....	.....
Miles traversed	6.05	Not continuous	Not continuous	4.05	.....	.....	.....	.....	.....
Time consumed	4 hr. 52 m.	6 hr. 30 m.	6 hr. 02 m.	4 hr. 51 m.	.....	.....	.....	.....	.....
Mean vel.—mi. per hr.	1.24	.....	Est'd 0.78	0.89	.....	.....	.....	.....	.....
Max. " " "	2.35	1.80	1.93	1.31	.....	.....	.....	.....	.....
Where maximum velocity occurred in miles from Spuyten Duyvil Bridge.	3%	6%	0%	5%	.....	.....	.....	.....	.....
Beginning of Flood Current:									
Time after L. W. G. I.	2 hr. 1* m.	1 hr. 10 m.	1 hr. 35 m.	1 hr. 40 m.	.....	.....	1 hr. 35 m.	.....	.....
Miles from Sp. Duy. Br.	0	5¼	0	3¼	.....	.....	0	.....	.....
Records during Ebb Current:									
Start—number of miles from Spuyten Duyvil Bridge	5½	.....	.....	.....	5½	6	6%	8¼**	.....
Time after H. W. G. I.	1 hr. 19 m.	.....	.....	.....	1 hr. 28 m.	1 hr. 10 m.	1 hr. 17 m.	1 hr. 44 m.	.....
Miles traversed	4.3	.....	.....	.....	5.39	6.28	6.95	5.25	.....
Time consumed	3 hr. 0 m.	.....	.....	.....	3 hr. 45 m.	4 hr. 05 m.	5 hr. 16 m.	5 hr. 36 m.	.....
Mean vel.—mi. per hr.	1.43	.....	.....	.....	1.43	1.54	1.30	0.94	.....
Max. " " "	2.35	.....	.....	.....	2.50	2.04	2.36	1.50†	.....
Where maximum velocity occurred in miles from Spuyten Duyvil Bridge.	1¼	.....	.....	.....	0	3%	3.00	5% & 6	.....
Beginning of Ebb Current:									
Time after H. W. G. I.	1 hr. 20 m.	1 hr. 30 m.	1 hr. 25 m.	0 hr. 25 m.	1 hr. 30 m.	1 hr. 10 m.	1 hr. 15 m.	1 hr. 45 m.	1 hr. 40 m.
Miles from Sp. Duy. Br.	5½	6	5%	7%	5¼	6	6%	8¼**	6½

* Approximate only. This time was not observed.

† A velocity of 1.43 was also observed in this float in the Bronx, N. Y.

** North West of North, Brooklyn Island.

3 The following statement comprises a summary of the principal facts regarding the float records as observed in the Harlem River.

NOTE.—Here and in the following discussion—

High Water at Governors Island is indicated by H W G I
and Low " " " " " " " " L W G I

From an inspection of this table the following inferences may be drawn, subject to modification with a greater number of records.

1. The flood current in the Harlem begins to run about an hour and a half after predicted L W G I.

2. The ebb current begins about an hour and a half after H W G I but progresses from the south end of the river northward as indicated by the following figures:

At 116th St.....	0 hr. 25m. after H W G I
" 122nd ".....	1 " 15 " " "
1.10 + 1.30	
" 131st ".....	1 " 20 " " "
2	
" 135th ".....	1 " 25 " " "
" 139th ".....	1 " 20 " " "
" 142nd ".....	1 " 30 " " "
" 219th ".....	1 " 45 " " "

3. The mean flood velocity appears to vary from $\frac{3}{4}$ mi. to $1\frac{1}{4}$ miles per hour, (1.1 to 1.8 ft. per sec.).

4. The mean ebb velocity approximates 1.4 miles per hour or 2.0 feet per second.

5. The maximum velocity varies with the cross-section of the channel, but in general it may be taken as about 2.35 miles per hour or 3.45 feet per second on the ebb.*

On the flood a velocity of 2.35 was noted once, the other maxima falling below 2 mi. per hour, indicating an ordinary maximum less than that in the ebb current.

6. The path of float No. 3 represents the flow of an entire flood tide, that of float No. 5 nearly an entire flood tide, and that of No. 7 represents the flow of an entire ebb tide. The path of float No. 13 (ebb) extends the entire length of the Harlem under consideration (north of Bronx Kills), while those of Nos. 5 and 7 extend over

* See note page 4.

nearly all of this distance. Float No. 6 showed a strong current flowing to the east through Bronx Kills and Little Hell Gate; floats 11, 12 and 13 passed into and down the Hudson; while No. 14 would have turned back in the Harlem between the Washington and University Heights Bridge on the arrival of the flood current. The distances traversed in the Harlem are:

Float No.	Flood.	Ebb.
5	6.05	
7	4.70	
8	4.05	
13	.....	8.95
Average of all mean velocities observed	0.97	1.33
Distance traversed on ebb	= 6.95	
Average distance traversed on flood	4.93	= 1.41
Average of mean ebb velocities	1.33	
Average of mean flood velocities	0.97	= 1.37

5 NOTE.—Assuming the above figures as correct there follows:

$$\begin{array}{r} \text{Mean veloc. } 2 \\ \hline \text{Max. veloc. } 3.45 \end{array} = 0.58$$

$$\text{According to the zin curve. . . } \left\{ \begin{array}{r} \text{Mean veloc. } 2 \\ \hline \text{Max. veloc. } \end{array} \right. = 0.64$$

These figures indicate:

a. That the general trend of sewage discharged into the Harlem River is toward the Hudson River.

b. That the general progression in this direction is from one to two miles per tide.

c. That the preponderance of discharge into the Hudson River over that into the East River may be taken provisionally at 40 per cent.

d. That practically the entire contents of the Harlem River at the end of the flood pass into the Hudson River during the ebb and that over half the contents at the end of the ebb pass into the East River during the flood.

The duration of slack water on either tide is shown to be short by the records of floats Nos. 6, 7, 8, 11, 12 & 13, as a rule not exceeding about fifteen minutes.

Although affected somewhat by the wind (see floats Nos. 5, 7) and so in some instances driven toward the shore, there seems to be no general tendency in this direction. On the contrary it is probable that floating matter generally follows the channel of the stream, and so finds a free exit to either the East or Hudson River.

6 The normal tidal current, however, is subject to variation, not only by the effect of the wind near the surface, but by the passage of vessels, the obstruction of piers and by the continual change in cross-section. In those reaches where the cross-section is constricted and the channel straight and uniform—as in the Ship Canal—a higher velocity will naturally obtain than where the opposite conditions are found.

The velocity of the float depends, not only on the above matters, but to a very considerable extent upon the part of the stream traversed. If near the shore the velocity may be greatly retarded. The mean and maximum velocities indicated by the floats are therefore likely to be less than the actual velocities they represent.

In Appendix 9 of the report of the U. S. C. & G. S. of 1888 the elevation of the Hudson at 42nd St. and of the East River at Polhemus Dock are given for each lunar hour. The mean elevation in the Hudson for the entire period is 0.02 above the mean sea-level at Sandy Hook and that of the East River 0.20 below that datum the resultant elevation in the Hudson being 0.22 above that in the East River.

By scaling from automatic tide gage records of the Dock Department for 24 hours from 10 p. m. April 24, 1908, taken at 131st St. in the Hudson and at Astoria in the East River the differences are more marked, the mean elevation of the Hudson being 0.30 above that in the East River.

7 These results, arrived at from independent sources, would lead one to expect a preponderance of flow from the Hudson through the Harlem to the East River.

By superimposing tide gage records taken simultaneously at 131st St. on the Hudson and Astoria on the East River it will be seen that the tide changes first in the Hudson and is of less amplitude than in the East River, also that the times of slack water in the Hudson River as observed by us occur very nearly at the times of equal elevation in the Hudson and East Rivers, indicating that the flow through the Harlem is truly "hydraulic" in character, that is, dependent in amount on the surface slope for its magnitude. For this

reason sewage discharged from the Harlem River is carried by the ebb toward the Sound in the East River and by the ebb down the Hudson and not in the reverse direction until the tide changes. The vertical distance between the two curves at any time represents the differences in elevation of the respective water surfaces at the time. It will also be observed that while this difference is greater during the flood tide the actual elevation of the surfaces is greater during the ebb. This last difference amounts to 0.67 by the above records and to 1.36 according to the figures contained in the U. S. C. & G. S. report above referred to. This means that during the ebb the cross-section of the water in the Harlem is greater than during the flood, tending to counteract the effect of the .2 or .3 higher average elevation of the Hudson. Then, too, the flood current is subject to a certain throttling in the constricted channel between Spuyten 8 Duyvil and Kingsbridge, while the entrance from near Randall's Island is more free and unobstructed. The relative values of these different factors it is impracticable to estimate owing to the irregular and variable character of the cross-section of the Harlem, and we must rely on the evidence of actual observations, as by floats, current meters, etc.

If we assume that the distance traversed by the flood current is 4.93 miles and that by the ebb is 6.95 miles, and if we take 12,600 sq. ft. as the mean cross-section of the Harlem River at mid tide,* the discharge into the East River during every flood tide is about 328 million cubic feet and that into the Hudson River 462 million cubic feet.

9 In view of the apparent anomaly of an excess of flow toward the stream having the higher average surface level the results of the small number of experiments by which this excess toward the Hudson is indicated should be confirmed by further observations before accepting them as final. On account of the narrow width of the Harlem, its obstruction by bridges, the interference of traffic, all of which interfere with the normal motion of a float, I recommend that a gauging of the stream be made to settle this question. To avoid the interference of traffic as much as possible, as well as the disturbance due to bridges, piers and other structures, such a gaging could best be undertaken toward the northern end of the stream, and a most favorable location would appear to be in the Harlem Ship Canal, where the channel is fairly uniform as to depth and width. In any plan adopted the necessity of avoiding interference with traffic has to be borne in mind.

To obtain the most reliable results expeditiously such a gaging should be done by the use of a current meter. If this plan is adopted

* An average of cross-section as scaled from the Coast Survey chart below the Broadway, High, Central and Park Avenue Bridges.

the stream should be cross-sectioned by soundings every 10 feet at the proposed location. The instrument can be operated from a launch anchored on a range line at right angles to the shore and located in position by observation from, or ranges set by, a transit at the end of a measured base on one shore. As the mean velocity is generally found at from 55 to 65% of the depth I would take the observations at a point 60% of the depth continuously or, at least, for 20 minutes each hour, for a complete cycle of the tide. By this method a complete integration of all the fluctuating velocities flowing water is subject to may be secured for each station on the desired cross-section, such stations being perhaps 50 feet apart, making zone 7 stations in all.

Such a series of observations would occupy 15 actual working days and is estimated to cost as follows, allowing one extra day for launch on account of bad weather:

Launch, Captain and one man, at \$17.00 per day.....	\$240.
Transit man at 5.00 " "	70.
Observer at 7.00 " "	98.
Current meter, material, etc.	175.
Cross-sectioning stream, etc.....	42.
	<hr/>
	\$625.00

If a current meter could be borrowed this amount would be correspondingly reduced.

A somewhat simple though not so accurate a gaging may be made by timing the passage of vertical float rods between two cross-sections 100 or 200 feet apart. The reason this is not so accurate a method is, first, that the rod cannot be of such a length as to represent the mean velocity, secondly, that the rods will not float in parallel directions between the two cross-sections but will be influenced by local eddies and cross currents, and, thirdly, because the cross-section of the channel itself is constantly changing between the upper and lower cross-sections. However, it is believed that this method would furnish results that will not vary from the true gaging as much as any one gaging may vary from another made under other conditions, (of fresh water in the Hudson, phase of the moon, etc.)

With rods 12 ft. long weighted at the lower end, 7 starting points, and observations hourly from each point, the estimated cost would be, allowing for one day extra for launch on account of rain:

10 floats		at \$1.00.....	\$10.
Launch and crew,	6 days	at 16.00.....	96.
Transitman	5 " "	5.00.....	25.
Starter	5 " "	4.00.....	20.
Man in rowboat to recover floats	5 " "	2.00.....	10.
Preparatory instrumental work, cross-sectioning, etc.....			49.
Total.....			\$210.

Very respectfully,

Chief Engineer.

COMPLAINANTS' EXHIBIT NO. 51. James D. Maher, Commissioner.

Float Observations.

NEW YORK, November 19, 1908.

Mr. George A. Soper, President Metropolitan Sewerage Commission,
New York City.

DEAR SIR: I beg to report as follows the results of float observations made by this Commission in the East River south of Hell Gate. The following are in round numbers the distances of important points from the north end of Governor's Island:

Brooklyn Bridge.....	1.3 miles.*
Manhattan ".....	1.6 "
Wallabout Channel.....	2.5 "
Williamsburgh Bridge.....	2.8 "
Newtown Creek.....	4.5 "
South end Blackwell's Is.....	5.5 "
North ".....	7.4 "
Mill Rocks and Hallet's Point.....	7.9 "

The accompanying table comprises a summary of the principal facts regarding observations on two floats made in 1907 and six floats in 1908 in this part of the East River, from which the following inferences may be drawn.

*In this discussion where the word "miles" occurs it is intended to mean "statute" miles and not "nautical" miles.

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1. The ebb current may be expected to set:

	h. m.	
Along between Williamsburgh bridge and Newtown Creek at.....	1.25	after H. W. G. L.
Midway between Newtown Creek and Blackwell's Island at 1.50	"	"
Southeast of Ward's Island.....	1.45	" "

The turn of the tide indicated by Float No. 38 in Hell Gate just northeast of Hallet's Point 3 h. 10 m. after H. W. G. L. is difficult to explain and would indicate that the time of slack water is subject to a considerable variation in this vicinity. The moderate north wind blowing at this time would not account for such a difference between the times noted here and those at other points.

2. The mean velocity of the flood may be taken as 2 miles per hour (3 ft. per sec.).

3. The mean velocity of the ebb may be taken provisionally at 2.8 miles per hour (4 ft. per sec.), this being an average of five ebb records extending over 7 miles in length, but as these vary from 2.16 to 3.70 miles per hour it may be that the velocity depends to a large degree upon the part of the channel traversed.

4. The maximum flood current is for short intervals and certain localities at least 6.8 miles per hour (10 ft. per sec.), but for any considerable distance and interval probably 4 miles per hour (6 ft. per sec.) would be a fair and usual figure.

5. The maximum ebb current noted was 8.57 miles per hour (12½ ft. per sec.) in approaching the channel west of Blackwell's Island from the north. For any considerable distance and interval 6 miles per hour (9 ft. per sec.) would probably be nearer the truth.

On account of the high velocities prevailing in this part of the East River the time taken to traverse the 7 or 8 miles is less than a complete ebb or flood tide as shown in the following figures:

Float (Mar. 7, 1907), covered 8 miles in 4h. 47m. of flood.					
" No. 38	"	5.64	"	2h. 47m.	" "
" No. 39	"	5.36	"	2h. 37m.	" "
Float (Mar. 29, 1907), covered 8.8 miles in 2h. 50m. of ebb.					
" No. 10	"	9.7	"	4h. 30m.	" "
" No. 23	"	7.68	"	2h. 5m.	" "
" No. 38	"	7.42	"	3h. 25m.	" "

This renders it impossible to arrive at precise figures for the mean velocity of the flood or ebb current or for the discharge of the stream at each tide. It is probable that owing to the fact that the flow is "hydraulic" or directly dependent upon the difference in head between Willet's Point and Governor's Island, the velocity and discharge vary to a considerable extent from the influence of the winds on the tidal elevations at those points.

We may be reasonably justified, however, in concluding from the results shown above and by reference to the plotted paths of the floats:

a. That there is a predominance of discharge to the harbor from Long Island Sound through the East River.

b. That, on account of the high mean velocities a volume equivalent to the contents of the East River south of Hell Gate passes out at each tide, that is, four times a day. It should be remembered, however, that the greater part of this water so discharged enters again on the following return of the tide.

c. That while the bulk of the sewage contained in the East River at the beginning of the flood current will find its way to the east of Hell Gate it is not likely to go far in this direction, but will eventually pass to the southward and through the Narrows to the ocean.

d. That the trend of the flood current may take the contents of the lower East River past the eastern channel at Blackwell's Island (Float 38), but that the main current from Hell Gate south passes through the western channel. (Floats of March 29 and Nos. 10, 16 and 38).

e. That the ebb current may pass to the west (Floats of March 29 and No. 23) or to the east (Floats Nos. 27 and 38) of Governor's Island.

f. That the duration of slack water is very brief (Floats Nos. 10, 27, 38).

g. That on account of the velocities, the predominance in one direction and the brief periods of slack water the bed of the East River south of Hell Gate is kept well scoured and free from extensive deposits except near the piers.

h. That there is an apparent tendency for floating matter to work in toward the Brooklyn shore on the flood current (Floats of March 7th and Nos. 10 and 38). It is possible that this is due in part to the wind, but the tendency is not shown by the ebb records.

NOTE.—The records of Float No. 38 is of particular interest as showing the nearly continuous path of the float during a complete cycle of the tidal flow. It was set adrift in the middle of the west channel opposite the north end of Blackwell's Island at 3.02 A. M. By 3.55 A. M. it had drifted $\frac{3}{4}$ mile into Hell Gate northeast of Hallet's Point. Here the ebb flow began, carrying it to 200 ft. south of Mill Rocks by 4.07 A. M., thence, with velocities increasing to $4\frac{1}{2}$ miles per hour, by the channel west of Blackwell's Island and then following the middle of the river to the south side of Wallabout bay by 6.38 A. M. From here it followed the eastern side of the river to the Manhattan bridge passing over 1,000 feet in 2 minutes (5.7 mi. per hour—its maximum velocity), 2,165 ft. in 6 minutes (4.1 mi. per hour) and 3,115 ft. in 8 minutes (4.4 miles per hour). From here the path swerved toward the center of the river and at 7.12 A. M. the float was 1,000 feet northeast of Governor's Island and had traversed the last 2.62 miles in 40 minutes, or at a rate of 3.93 miles per hour. Passing down the west side of Buttermilk Channel the float reached a point 1.2 miles south of Governor's Island and about a mile west of the pier head line just south of Gowanus Canal at 8.44 A. M. Here, due in part to a strong west wind, at slack tide, the float drifted $\frac{3}{4}$ mile toward the shore with a velocity of about 2 miles per hour and then at 9.37 A. M. turned northerly on the flood current. This, with the wind, carried it up the Buttermilk Channel close to the pierhead line with velocities increasing quite uniformly to 2 miles per hour by 12.47 P. M., when it reached the Brooklyn bridge. Between this point and the Atlantic Basin (11.55 A. M.) it had run ashore five times and had been reset from 100 feet to 300 feet out. At the Brooklyn bridge it was reset about 750 feet from the east pier and from here traversed 1.45 miles in 20 minutes or at the rate of 4.35 miles per hour, the maximum velocity of 6.8 miles per hour occurring in a distance of .34 miles opposite the Wallabout Basin. Here the float crossed from the west to the east side of the river which it followed until past Newtown Creek at 1.54 P. M. From here it swerved toward mid-stream but passed up the east channel close to the Blackwell's Island shore, reversing its direction sharply with the turn of the tide at 3.34 P. M. 1.35 miles below its position at the beginning of the previous ebb flow, and $\frac{3}{4}$ mile above the Blackwell's Island bridge, which it

reached again on the ebb current at 4.18 P. M. The total distance traveled was 20.4 miles in 13 hours 16 minutes. Of this 10.39 miles were traversed on the ebb in 5 hours 42 minutes at a mean velocity of 1.82 miles per hour, and 9.11 miles were traversed on the flood in 5 hours 54 minutes at a mean velocity of 1.54 miles per hour.

Respectfully submitted,
(Signed)

KENNETH ALLEN.

1 COMPLAINANTS' EXHIBIT No. 57. James D. Maher, Commissioner.

Float Observations.

Copy.

NOVEMBER 9, 1908.

Dr. George A. Soper, President Metropolitan Sewerage Commission, New York City.

DEAR SIR: I beg to report as follows the results of float observations made in the East River between Hell Gate and Long Island Sound during August and September.

This portion of the East River receives from the west the waters of the lower portion of the East River and the Harlem River through Hell Gate, Little Hell Gate and Bronx Kills—three channels formed by Ward's and Randall's Islands: and from the east the waters of Long Island Sound.

From a point in the East River at the south end of the Harlem, between Hallet's Point and Mill Rocks, the distances to prominent points in the East River toward Long Island Sound are:

Mill Rocks and Hallet's Point.....	0	mi.*
Sunken Meadow.....	1 $\frac{3}{4}$	"
North & South Brother's Islands.....	2 $\frac{3}{4}$	"
North End of Riker's Island.....	3 $\frac{1}{4}$	"
Hunt's Point.....	4 $\frac{1}{8}$	"
College Point.....	5 $\frac{1}{8}$	"
Closson Point.....	5 $\frac{5}{8}$	"
Tallman Point.....	5 $\frac{7}{8}$	"
Old Ferry Point.....	6 $\frac{1}{2}$	"
Whitestone Point.....	6 $\frac{3}{4}$	"
Between Ft. Schuyler & Willet's Pt.....	8 $\frac{3}{4}$	"

*In this discussion, where the word "miles" occurs it is intended to mean "statute" miles and not "nautical" miles.

Float Observations in East River East of Hell Gate.

2

Data Obtained.

Float No.	14.	15.	16.	17.	18.	19.	25.
H. W. G. I.	8.46 A. M.	Aug. 29, 9.16 A. M.	Aug. 31, 10.25 A. M.	Sept. 1, 11.08 A. M.	Sept. 2, 11.57 A. M.	Sept. 3, 12.52 P. M.	Sept. 10, 7.40 A. M.
Date, 1908	Aug. 28.	Aug. 28.	{ 4.23 A. M. }	{ 4.56 A. M. }	5.38 A. M.	6.27 A. M.	2.00 P. M.
L. W. G. I.	3.03 P. M.	3.26 A. M.	{ 4.50 P. M. }				

Records During Northeasterly Current.

Start, No. mi. from Mill Rocks Is.	0	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3 $\frac{1}{2}$	6 $\frac{3}{4}$		
Time after L. W. G. I.	5 h. 37 m.	5 h. 16 m.	4 h. 52 m.	3 h. 7 m.	2 h. 59 m.		
Miles traversed	2.90	2.82	1.54	4.41	2.85		
Time consumed	1 h. 56 m.	2 h. 23 m.	1 h. 45 m.	4 h. 55 m.	4 h. 04 m.		
Mean vel. mi. per hr.	1.55	1.18	0.88	0.90	0.71		
Max. " " "	4.00	2.55	1.41	2.08	1.31		
Where max. occurred, mi. from Mill Rock Is.	1 $\frac{1}{2}$	2 $\frac{7}{8}$	3 $\frac{1}{4}$	5% to 6 $\frac{1}{2}$	8%		
Beginning of N. E. current:							
Time after W. G. I.							
Miles from M. R. Is.							

Records During Southwesterly Current.

Start, No. mi. fr. Mill Rocks Id.		3%	6 $\frac{1}{4}$	7%	6%		
Time after H. W. G. I.		2 h. 15 m.	3 h. 29 m.	1 h. 51 m.	2 h. 15 m.		
Miles Traversed		3.28	1.12	0.53	0.85		
Time consumed		2 h. 23 m.	0 h. 53 m.	2 h. 02 m.	5 h. 48 m.		
Mean vel. mi. per hr.		1.37	1.27	0.28	1.18		
Max. " " "		5.00	1.37	0.46	1.98		
Where max. vel. occurred, mi. from Mill Rocks Id.		$\frac{1}{2}$ to 1 $\frac{1}{2}$	5% to 6 $\frac{3}{4}$	7%	5 $\frac{1}{2}$		
Reg. of S. W. current:							
Time after H. W. G. I.*		2 h. 15 m.		1 h. 50 m.	0 h. 0 m.		1 h. 02.05*
MI. fr. M. R. Id.		3%		7%	9 $\frac{1}{2}$		6%

* Not observed. ** 1 h. 45 m. for Float No. 14.

The principal data resulting from float observations in this vicinity are comprised in the attached table.

The small number of float records taken in this part of the East River do not warrant very positive statements as to the results. The presence of Islands near the western end with the influence of the currents to or from the Harlem River render the hydraulic phenomena here complicated and constantly varying, while the tortuous paths of the floats indicate the absence of any one main channel which conveys at all times the greater part of the discharge. An inspection of the Coast Survey Chart shows, as we might expect, no well defined narrow channel but a waterway varying from about 30 to over 100 feet in depth, extending almost from shore to shore between Throg's Neck (Ft. Schuyler) and College Point. Here shoals to the east of Riker's Island split the westward current which becomes further divided in its approach to the Manhattan shore, and the contracted, rocky and shallow channels through Hell Gate, Little Hell Gate and Bronx Kills cause an increase in slope and velocity of the water surface at times of the strength of tide.

We may, however, draw the following inferences from an inspection of the data secured.

1. The beginning of the ebb current occurs about two hours later than at Governor's Island. According to the observations it begins earlier at Throg's Neck than at Hallet's Point, being 2 hrs. 15 mins. after H. W. G. I. between Sanford's Point and Riker's Island, 2 hrs. 16 min. off Whitestone Point, 1 hr. 50 min. near Throg's Neck and about one hour one half mile N. E. of Throg's Neck.

2. The mean velocity is probably about 1.2 miles per hour for a full tide but this varies with the location.

3. The maximum velocity varies yet more with the characteristics of the channel. On the flood, 4.0 miles per hour was noted just east of Little Hell Gate and 3.6 mi. per hr. north of Riker's Island, while to the east of this two miles per hour appears to be a more nearly correct figure.

On the ebb 5.0 miles per hour was found in the narrows channel east of Ward's Island, and 2.18 mi. per hr. was noted west of Riker's Island, but east of this the maximum observed velocity—between Whitestone Point and Tallman Island—was only 1.37 mi. per hr.

4. The record of float No. 25, which was set adrift 2 h. 15 m. after H. W. G. I. and taken out 1 h. 43 m. after L. W. G. I. practically comprises a complete ebb tide. The distance traversed was 6.85 miles.

Float No. 18, which was observed from 3 hrs. 7 m. after H. W. G. I. to the time of the tide at 1 hr. 43 m. after L. W. G. I. is the longest flood record, covering 4.41 miles.

Considering these two records only, the mean velocity during the ebb is 1.2 mi. per hour or $33\frac{1}{2}\%$ greater than the 0.9 mi. per hr. noted during the flood, while the maximum velocity of 2.08 miles on the ebb exceeds the 1.98 observed on the flood by 5%. These figures mean little, however, owing to the irregular character of the currents, as already explained, but confirm in a slight degree the general opinion that there is an excess of flow from the sound into and down the East River.

5 Aside from the data contained in the foregoing table the paths taken by floats Nos. 2, 6 and 9 west of Randall's and Ward's Islands show the general trend of the currents at certain stages of the tide in this vicinity, where the current of the Harlem joins those of the eastern and southern reaches of the East River.

Float No. 2 was set adrift west of Little Hell Gate 44 minutes before H. W. G. I. and in 26 minutes traversed about 350 ft. toward the entrance to Little Hell Gate. At this period of the tide the Harlem River above Bronx Kills and the East River at Hallet's Point were presumably both in ebb, and the float would have passed Ward's Island on the north and east and thence gone down the East River.

About a quarter of an hour before H. W. G. I. the float was set adrift a little north of the previous point, and in 11 minutes traversed 300 ft. in a southerly direction, and if left would have continued down the East River west of Ward's Island or else by way of Little Hell Gate until the turn of the tide.

A quarter of an hour after H. W. G. I. it was again set out on the west side of the river west of the House of Refuge on Randall's Island, and, after curving to the south and east, at about 35 minutes after H. W. G. I., began moving to the north. Again at about 1 hr. 50 m. after H. W. G. I., when near 700 ft. from its starting point, its motion was reversed and in an hour and 40 minutes had passed its previous most southerly point. The ebb or northerly flow probably began in the Harlem a short distance north of this 20 or 30 minutes before the last reversal of float's motion. It appears, therefore, that the tidal currents of the Harlem and lower East River meet in the vicinity of Randall's Island.

6 Float No. 6 was set adrift at various points above and west of Randall's Island between 3 hrs. 5m. and 4 hrs. 44 m. after L. W. G. I. Both the Harlem and East River being in flood there was a marked tendency to pass to the south and then eastward through the Bronx Kills and Little Hell Gate. Set adrift a little south of Little Hell Gate and on the west side of the River the trend was northeasterly toward Little Hell Gate, which the float would have gone through on its way toward the Sound.

Float No. 9 was set adrift a little south of the entrance to Little Hell Gate about an hour before L. W. G. I., the Harlem and East River being in ebb. After going in a southerly direction for some 1,500 ft. its course was reversed at 5 minutes after L. W. G. I. Set adrift again it took a southerly direction again which was reversed at 50 minutes after L. W. G. I. The Harlem and East Rivers both being in ebb the influence of the Harlem appears to have been greater, although the northerly trend may have been influenced by a light southerly wind.

Passing to just above the entrance to Bronx Kills the float reversed its direction to the south 4 hrs. after L. W. G. I., again to the north at 5 hrs. L. W. G. I., and again to the south at 5 hrs. 50 m. after L. W. G. I. During this time the Harlem and East Rivers were in flood and the erratic motions of the float indicate the attempt of the two currents meeting here to secure a condition of equilibrium.

From a consideration of the above facts regarding these portions of the East River we may infer:

7 a. That sewage discharged in the deep water east of Riker's Island would not follow any well defined course but would be influenced by the existing and variable currents and winds. In many locations, especially in the bays and near the shores, deposits would be likely to occur.

b. Sewage finding its way to the shallower waters of Hell Gate, Little Hell Gate and Bronx Kills would in general be swept by the rapid tidal currents either to the Sound or to the East River.

c. Owing to the uncertain currents and low velocities in the Harlem between Hell Gate and Bronx Kills and from the fact that there is no positive and periodical current of any magnitude passing between the East River east of Hell Gate and the Harlem River, this

part of the River is not considered as favorable for the reception of large volumes of sewage. Such as may be discharged here may find its way either to the Hudson, to New York harbor or, possibly, to Long Island Sound.

Respectfully submitted,

KENNETH ALLEN,
Chief Engineer.

COMPLAINANTS' EXHIBIT No. 67. James D. Maher, Commissioner.

Copy.

Float Observations.

February 18, 1909.

Dr. George A. Soper, President Metropolitan Sewerage Commission,
New York City.

DEAR SIR: I beg to report as follows the results of the observations of floats set adrift in the Upper Bay near the proposed outlet of the Passaic Valley sewer, which is, roughly, some 700 feet easterly from the Robbins Reef bellbuoy as scaled from a map in the last report of the Passaic Valley Sewerage Commissioners. This point is distant from:

The Battery.....	3.8 miles.*
Statue of Liberty.....	2.4 "
Bay Ridge.....	1.7 "
The Narrows.....	3.5 "
St. George ferry slip.....	1.0 "
Constable Hook.....	1.5 "

*In this discussion when the word "miles" occurs it is intended to mean "statute" and not "nautical" miles.

The following tables comprise a summary of the principal facts as regards the paths taken by 6 floats set out in 1907 and 9 in 1908.

From these results the following inferences may be drawn:

(1) In the vicinity of the proposed Passaic Valley sewer outlet, which will be referred to, for convenience, as Robbins Reef, the flood current is running to the west, up the Kill van Kull, at about 2 hours after L. W. G. L., (Float #28), and in a northerly direction shortly after this time (Float of March 5, 1907*) until 2 hrs. after H. W. G. L. (Float #32). A southerly (ebb) current may be expected here at other times.

(2) The extreme points reached during a single tide were, in the:

	Float No.
Kill van Kull, Shooters Island—a distance of 5.27 mi. in 4 h. 38 m...	28
Hudson River, 60th St., Manhattan— " " 9.14 " " 6 h. 18 m...	34
Upper Bay—E. side, Red Hook— " " 2.78 " " 3 h. 23 m...	35†
Lower Bay—From 2½ mi. S. E. to— " " 11.50 " " 6 h. 0 m...2/26/07	
2 mi. S. W. of West Bank Light— " " 11.25 " " 6 h. 30 m...7/ 9/07	

* It is possible that this float would have been influenced more by a westerly current up the Kill van Kull if it had not been set out ¼ N. E. of Robbins Reef, and if a moderate S. W. wind had not been blowing.

† No float went up the East River. Float #35, evidently influenced by a strong west wind, might have done so if set out earlier.

3 Velocities observed near the location of the proposed outlet of the Passaic Valley sewer were as follows:

Time after H. W. G. I.	Float.	Current.	Veloc. Ft. per Sec.
1 h. 20 m.	No. 32	Flood	1.2
2 h. 30 m.	" 31	Ebb	0.6
2 h. 50 m.	3/4/07	"	2.2
3 h. 0 m.	6/25/07	"	3.7
3 h. 20 m.	No. 37	"	0.2
3 h. 40 m.	7/8/07	"	2.5
3 h. 50 m.	2/26/07	"	2.2
3 h. 50 m.	7/9/07	"	2.2
5 h. 45 m.	No. 30	"	2.8
Time after L. W. G. I.			
0 h. 40 m.	No. 29	"	2.6
2 h. 0 m.	No. 26	"	2.1
3 h. 0 m.	3/8/07	Flood	1.5
4 h. 0 m.	No. 34	"	1.9
4 h. 15 m.	No. 37	"	0.3
4 h. 30 m.	No. 35	"	0.7
5 h. 0 m.	No. 33	"	1.7

The above figures indicate velocities varying from 0.3 ft. to 1.9 ft. per sec. on flood currents and from 0.2 to 3.7 ft. per sec. on ebb currents. The low value of .2 ft. per sec. coming 3 h. 20 m. after H. W. G. I. and 0.3 with the same float 4 h. 15 m. after L. W. G. I. indicates a considerable variation in the velocities that may occur at any given time. It is evident that at times the velocity of the

current would not prevent deposition of sludge, while at other times a good scouring action would obtain, more particularly on the ebb, where the velocities are seen to exceed those on flood currents.

As to the mean and maximum velocities at other points the data given indicate that during flood currents:

1. A mean velocity of about 1.7 mi. per hour may obtain in Kill van Kull.

2. Mean velocities of from 0.8 to 1.45 may occur at points between Robbins Reef and the Hudson opposite 60th St.

3. A maximum velocity of 2.6 mi. per hr. may obtain in Kill van Kull.

4. Maximum velocities of from 1.5 to 1.65 may be expected at points between Robbins Reef and a point in the Hudson River 5 miles to the north (near Christopher St.)

and that during the ebb currents:

1. Mean velocities of from 1.2 to 1.9 mi. per hr. may be expected.

2. Maximum velocities will be found varying from 2 to 4.25 mi. per hour. The maximum velocities appear to increase from Robbins Reef to the Narrows, as would be expected on account of the constricted section, or possibly below, 3.14 mi. per hour being noted in the case of Float #32 nearly as far south as Hoffman Island.

The values given depend, of course, upon the location, the wind

Net No.	2/26/07.	3/4/07.	3/5/07.	6/26/07.
Loc.	7.08 A. M.	11.17 A. M.	Noon.	8.38 A. M.
L. W. G. I.	1.24 P. M.	5.33 P. M.	5.44 A. M.	....
L. V. G. I.*††	Ebb.	Ebb.	Flood.	Ebb.
Amount	1 ml. N. E.	1 ml. N. E.	¾ ml. N. E.	½ ml. E.
Net of Starting (approx.)	of R. R.**††	of R. R.	of R. R.	of R. R.
Time after H. W. G. I.	2 h. 52 m.	2 h. 13 m.	....	2 h. 32 m.*
" " L. W. G. I. ....	....	....	2 h. 16 m.	...
Time Traversed	11.5	11	8	...
Time consumed	6 h. 0 m.	4 h. 0 m.	6 h. 45 m.	3 h. 40 m.
Max vel.—mi. per hr.	1.9	2.75	1.2	....
Lat. " —mi. per hr.	3.0	4.25	1.5	2.0
Time max. vel. occurred	Narrows, to E. of Hoffman I.	Narrows, to E. of Swintburne I.	In Hudson 6 mi. N. of R. R.	E. of S. I. ferry to Quarantine.
Amount	Flood.	Flood.	Ebb.	Flood.
Not reached at slack water	2½ ml. S. E. of West Bank.	1 ml. N. E. of Homer Shoal.††	Hudson R. opp. 54th St.	....
Time of slack W. after H. W. G. I. ....	....	....	2 h. 45 m.	....
Time of slack w. after L. W. G. I.	2 h. 36 m.	....	4	....
Time traversed .....	....	....	3 h. 05 m.	....
Time consumed .....	....	....	1.3	....
Max vel.—mi. per hr. ....	....	....	1.5	....
Lat. vel.—mi. per hr. ....	....	....	In Hudson	....
Time max. vel. occurred .....	....	....	6½ ml. N. of R. R.	....
Not reached at slack water .....	....	....	....	....
Time after H. W. G. I. ....	....	....	....	....
Time after L. W. G. I. ....	....	....	....	....

* Slack water probably 2 h. 30 m. after H. W. G. I.

** " " " 2 hrs. " " " "

*** Record imperfect.

† Slack water in Main Channel about 1½ mile to the

†† Tide still ebbing.

* On flood, preceded by 0.26 ml. S. W. on ebb current is

... " " " 0.20 " " " "

**† L. W. G. I. 1907. Approximate only.

**†† R. R. refers to Robbins Reef.

First Observations from Near Robbins Reef.

Data Obtained.

	28.	29.	30.	31.	32.	33.	34.	35.	37.
9/26/07.	7/8/07.	7/9/07.	9/16/08.	9/17/08.	9/18/08.	9/22/08.	9/23/08.	9/24/08.	10/1/08.
8.38 A. M.	6.38 A. M.	7.23 A. M.	12.40 P. M.	1.40 P. M.	2.35 A. M.	6.11 A. M.	7.30 A. M.	8.09 A. M.	9.55 A. M.
	12.54 P. M.	1.30 P. M.	6.40 A. M.	7.30 A. M.	8.42 A. M.	12.12 P. M.	2.00 P. M.	2.14 A. M.	3.44 A. M.
Ebb.	Ebb.	Ebb.	Flood.	Ebb.	Ebb.	Flood.	Flood.	Flood.	Flood.
1/2 mi. E. of R. R.	1/2 mi. E. of R. R.	1 1/2 mi. E. of R. R.	700' E. of bell buoy.	700' E. of bell buoy.	700' E. of bell buoy.	700' E. of bell buoy.	700' E. of bell buoy.	700' E. of bell buoy.	700' E. of bell buoy.
2 h. 32 m.*	3 h. 32 m.	3 h. 07 m.**	1 h. 55 m.	0 h. 36 m.	2.19	5.21	1.0	3.33	4 h. 23 m.
...	...	11.35	5.27*	1.85	2.19	5.21	1.0	3.33	2.78
2 h. 40 m.	3 h. 50 m.	6 h. 30 m.	4 h. 38 m.	1 h. 47 m.	2 h. 05 m.	4 h. 34 m.	1 h. 11 m.	3 h. 44 m.	6 h. 18 m.
...	1.5	1.75	1.08	1.04	1.05	1.12	...	0.80	3 h. 23 m.
2.0	2.0	2.5	2.00	3.00	1.91	3.18	...	1.65	0.82
E. of S. I. ferry to quarantine.	Narrows.	Narrows to E. of Swinburne I.	In Kill van Kull opp. New Brighton.	4 to 8 mi. from Robbins Reef.	From start to Baxter Ledge Anchor Buoy.	Midstream off Stapleton.	Midway betw. Robbins Reef & Gov's Id.	From .3 mi. E. of Ellis Id. to opp. Communipaw.	Between Castle William & the Aquarium.
Flood.	Flood.	Flood.	Ebb.	Flood.	Flood.	Ebb.	Ebb.	Ebb.	Ebb.
...	1/2 mi. S. E. of Hoffman I.	2 mi. S. W. of Wets Bank.	South of Shedd's I.	2 mi. S. of R. R.	Just S. of Canal 98. Pier — Stapleton.	South of Beach.	1 mi. N. E. of Robbins Reef.	0.6 mi. N. E. of Liberty I.	N. J. side of Hudson opp. 60th St., Manhattan.
...	1 h. 06 m.	3 h. 20 m.†	0 h. 38 m.	3 h. 16 m.	1 h. 38 m.	1 h. 02 m.	2 h. 22 m.	2 h. 48 m.	4 h. 11 m.
...	1.75	...	...	4.10	1.16	...	7.55	...	...
...	2 h. 45 m.	...	...	4 h. 50 m.	2 h. 38 m.	...	5 h. 12 m.	...	...
...	.64	...	...	0.85	.44	...	1.37	...	...
...	...	...	...	1.58	1.00	...	3.14	...	...
...	...	...	...	.8 mi. E. of R. R.	.7 mi. E. of Stapleton.	...	1/2 to 3/4 mi. N. of Hoffman I.	...	...
...	...	...	...	.45 mi. S. W. of Gov's I.	...	...	1/2 mi. S. E. of Hoffman I.	...	...
...	...	...	...	1 h. 50 m.	...	...	1 h. 15 m.	...	...

W. G. I.

... to the east.

ebb current in 11 minutes.

" " 46 "



and the land water flow from the Hudson, any one of which may exert a marked influence on the velocity of the current.

An examination of the plotted paths of these floats show- a tendency in many cases to hug the shore—of Jersey City in the case of No. 34; of Brooklyn in the case of #35; of Manhattan in the case of No. 37; of Staten Island above the Narrows in the case of the floats of 2/26/07, 3/4/07, 7/8/07 and Nos. 29 and 32, and of Staten Island below the Narrows in the case of the float of 6/26/07 and No. 31. It is noted, also, that at the turn of the tide the path described is in nearly every case (Floats of 3/8/07 and Nos. 29, 30, 32, 33, 34 and 37) counter-clockwise, or to the left. The exceptions are in the case of floats No. 31, close to the Staten Island shore, and No. 35, which may have been influenced by a strong west wind. This phenomenon is confirmed by the statement of Mr. Jacob Walker, salinometer observer, Robbins Reef, who states that

at high water the current sets N. N. W.

at mid-ebb " " " S. E.

at low water " " " S. S. W.

at mid-flood " " " W.

It is probable that times of slack water will vary in the Hudson and Upper Bay with the volume of land water passing out but the observed times have been, in round numbers, as follows:

Float No.	Location.	Slack High Water.
34	West side of Hudson opp. 60th St.....	4 h. 10 m. after H. W. G. I.
3/ 5/07	East " " " " 54th "	2 h. 45 m. " "
37	East " " " " Bank "	3 h. 50 m. " "
33	0.6 mi. N. E. of Liberty Island.....	2 h. 50 m. " "
35	Off Red Hook.....	1 h. 35 m. " "
7/ 9/07	1 1/4 mi. N. E. of Robbins Reef.....	3 h. 00 m. " "
32	1 " " " " "	2 h. 20 m. " "
7/26/07	1 1/2 " " " " "	0 h. 20 m. " "
28	S. of Shooters Island.....	

6

Float No.	Location.	Slack Low Water.
28	1/2 mi. S. of Robbins Reef.....	1 h. 55 m.
37	" " " "	3 h. 55 m.
29	2 " S. E. " "	3 h. 15 m.
30	Canal St. Pier—Stapleton.....	2 h. 0 m.
31	South Beach, S. I.....	1 h. 0 m.
7/ 8/07	1 1/2 mi. S. E. of Hoffman Id.....	1 h. 05 m.
2/26/07	2 3/4 mi. S. E. of West Bank Light.....	2 h. 35 m.
7/ 9/07	1 1/2 " S. " " " "	3 h. 20 m.

These results, obtained from so limited a series of observations, appear so erratic that no safe conclusions can be drawn from them except to emphasize the fact the times of slack water are subject to considerable variation.

Another curious action of the floats observed is in the curve described near West Bank Light and near the end of the ebb by the float of 2/26/07 to the east with a southerly wind and by that of 3/4/07 to the east with a northerly wind, while the float of 7/9/07 describes a curve toward the west in spite of a westerly wind.

(Here follows paster, marked page 7.)

Finally it may be said, in general:

(a) That sewage if discharged at the proposed outfall near Robbins Reef might for short periods of the tide be carried up the Kill van Kull as far as Shooters Island but with currents that would prevent much deposition unless near the shores.

(b) That it might reach as far north in the Hudson as 60th St.

(c) That, with a strong westerly wind it might be carried
8 to Red Hook or possibly into the East River and then return along the Brooklyn shore.

(d) That the ebb current would carry it below the Narrows and at times as far as Romer Shoal.

(e) That if the bottom velocities at the outlet are similar to those near the surface, they would not at all times prevent the formation of deposits, but with fine screening and sedimentation the periodical maximum tidal currents would probably remove the greater part of such deposits.

(f) That there appears to be a tendency for the currents from Robbins Reef to follow the shores.

Respectfully submitted,

(Signed)

KENNETH ALLEN,
Chief Engineer.

1 COMPLAINANTS' EXHIBIT No. 69. James D. Maher, Commissioner.

Copy.

Float Observations.

February 13, 1909.

Dr. George A. Soper, President Metropolitan Sewerage Commission, New York City.

DEAR SIR: I beg to supplement my report of November 19, 1908, on float observations in the East River south of Hell Gate with the following notes concerning Float No. 36 which had not been plotted at that time:

Float No. 36, September 30, 1908.

L. W. G. I. 420 A. M. H. W. G. I. 10.30 A. M

	Flood record.	Ebb record.
Start—No. mi. from N. end of Governors Id	0.65 miles	10.34 miles
Time after	LWGI—3h., 22m.	HWGI—2h., 10m.
Miles traversed	9.69 miles	4.55 miles
Time consumed	4h., 52m.	2h., 30m.
Mean vel.—mi. per hour	2.09	1.82
Max. " " " "	4.30	6.00
Where max. occurred—mi. from N. end of Governors Id	5.0	6.7
Beginning of Ebb current—Time after HWGI* .....	.....	2h., 10m.
Mi. from N. end of Governors Id ....	.....	10.65

* After 14 minutes of slack water.

2 Comparing these figures with those deduced from the floats considered in my reports of Nov. 19* and (with reference to the time of slack high water) of Nov. 9*, the conclusions then reached appear to be confirmed except that the maximum velocities noted with float No. 36 are somewhat less than with those previously noted: 4.3 in place of 6.8 in the case of flood currents and 6.0 in place of 9.0 mi. per hr. (9.0 to 6.0 being given as the probable range). I do not attach great importance to this variation; 1st, because the records are too few in number to draw definite conclusions as to the maximum velocity; 2nd, because the records of float No. 36 cover but a part of a tide—about 5 hrs. of the flood and 2½ hrs. of the ebb; 3rd, because the maximum velocity depends on the

*See page 2 of that report.

relation of tidal levels as affected by the winds in the bay and in Long Island Sound; and 4th, because it depends on the cross-section of the stream, which varies greatly in this stream:

Float No. 36 traversed 9.69 miles in 4 h. 52 m. of flood and 4.3 miles in 2 h. 30 m. of ebb. This is the longest flood record in the lower East River and it is noted that the longest ebb record (Float No. 10) covered 9.7 miles in 4 h. 30 m., the mean velocity being 2.16 mi. per hour, while on the flood float No. 36 made an average of 2.09 mi. per hr., indicating no great preponderance of flow in either direction.

The record of float No. 36 confirms the opinion that the trend of westerly currents through Hell Gate is down the westerly side of Blackwell's Island, and show that the flood current may also tend to pass through this channel, although (Float No. 38) this is not always the case.

The duration of slack water south of North Brother's Island was 14 minutes.

The tendency of the flood current to hug the Brooklyn shore is confirmed. In this case, in spite of a "moderate" to "strong" north-east wind, the float drifted into three slips between Wallabout Bay and Newtown Creek and had to be re-set.

Respectfully submitted,

(Signed)

KENNETH ALLEN,
Chief Engineer.

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

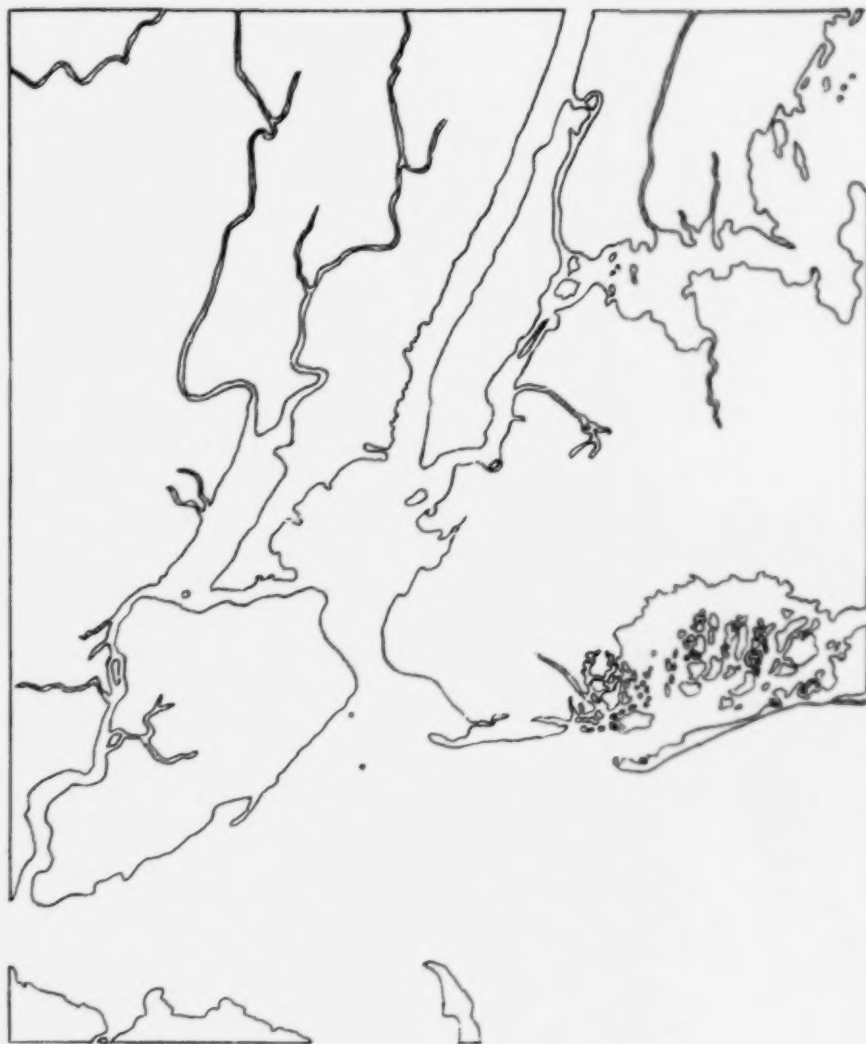
VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 88.

JAMES D. MAHER,
Commissioner.

THE HARBOR OF NEW



at Mean Low Water



at 6 feet below M.L.W.

*Compassionate Ex
James M. D.*

ARBOR OF NEW YORK

SCALE
Statute Miles
0 5 10 15



at 6 feet below M.L.W.



at 12 feet below M.L.W.

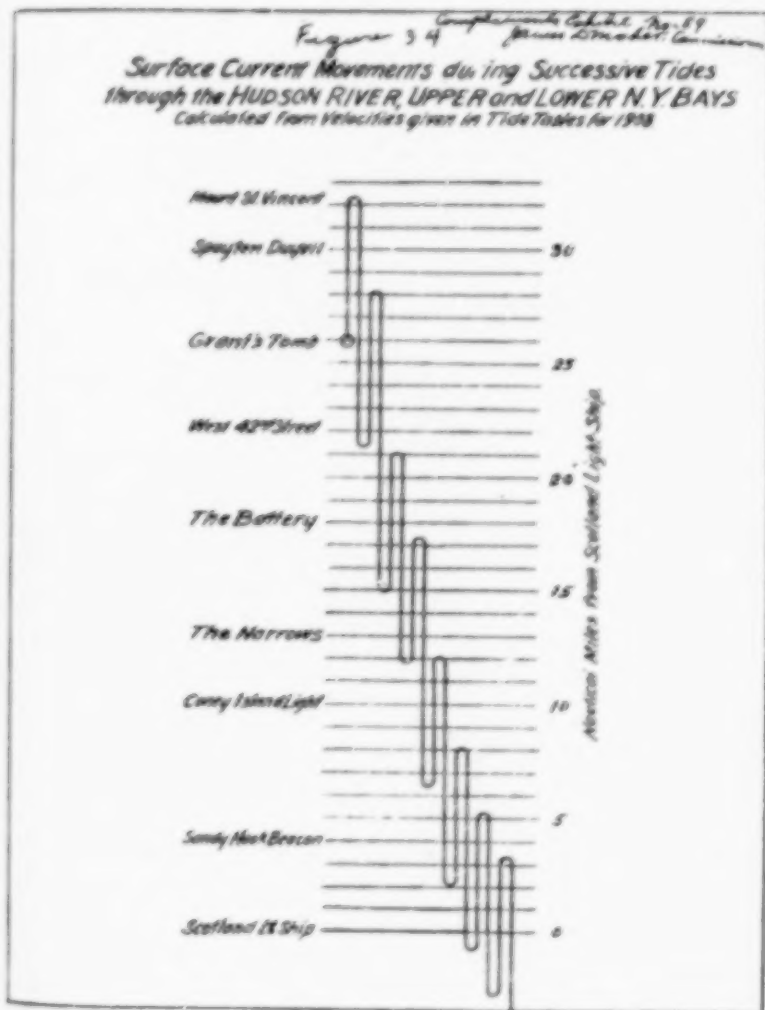
THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

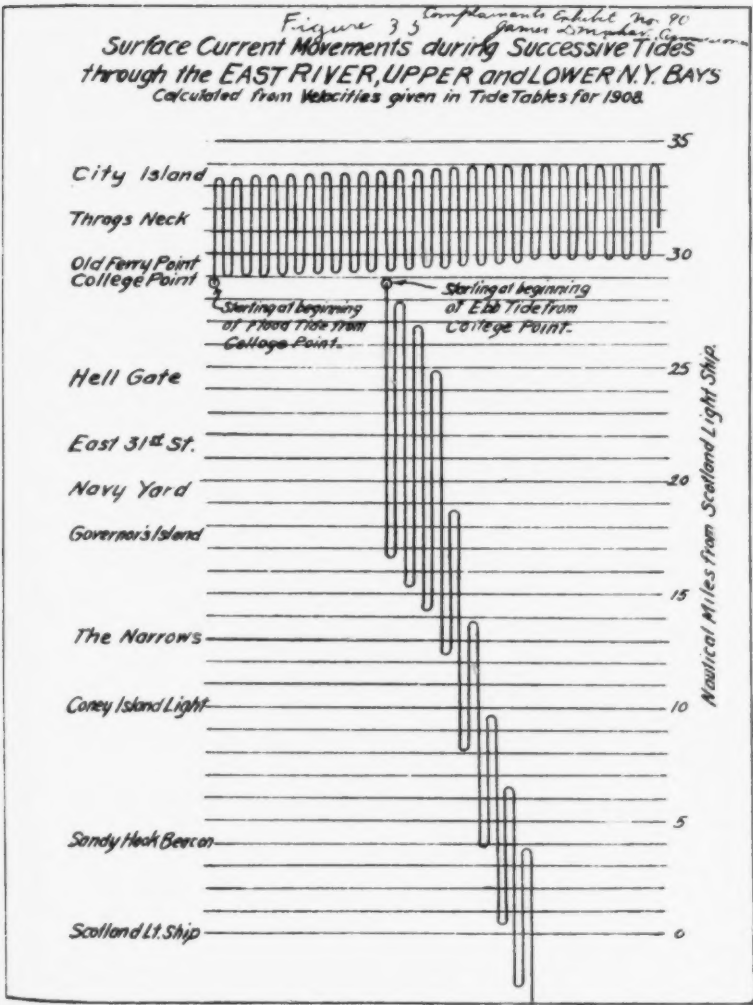
STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBITS Nos. 89 and 90.

JAMES D. MAHER,
Commissioner.







*Complainant's Exhibit No. 91.
James D. Macart,
Commissary*

BRIEF REPORT ON THE TIDAL ACTIONS

IN THE HARBOR OF NEW YORK

by

H. de B. Parsons.

18th December, 1911.

H. DE B. PARSONS,
22 WILLIAM STREET,
NEW YORK

BRIEF REPORT ON THE TIDAL ACTIONS
IN THE HARBOR OF NEW YORKby
H. de E. Parsons.

It is difficult to clearly and concisely describe the tidal actions of the water in the Harbor of New York, because the movements of the water are not synchronous in all parts of the harbor. The salient features, however, are contained in this report.

TABLE 1.

Areas, Depths, Tidal Ranges, Volumes and Tidal Prisms.

	Area Sq.W.	Av. Depth ft.	Av. Tide Range ft.	Volume below M.L.W. cu.ft. ^g	Tidal Prism cu.ft. g	Per- cent- age. H
Upper Bay	20.74	22.4	4.4	12,970	2,541	19.6
Hudson River, Battery to Mt.St.Vincent	14.49	30.7	4.2	12,330	1,697	13.7
East River, Battery to East 88th Street	3.50	31.7	4.7	3,091	459	14.8
East River, East 88th St. to Old Ferry Pt.	9.12	22.3	6.2	5,680	1,375	27.7
East River, Old Ferry Pt. to Throg's Neck	2.58	38.6	7.1	2,791	811	18.3
Harlem River	0.70	9.7	5.3	189	103.4	54.7
Newark Bay	8.35	6.6	4.6	1,542	1,071	69.3
Kill van Kull	1.12	23.4	4.8	728	149.8	20.6
Arthur Kill	4.63	13.1	5.4	1,690	697	41.2

^g In Millions of cubic feet.^H Ratio of tidal prism to volume below M.L.W. in per cent.

TABLE

Normal Swiftest Surface Velocities at Strength in Knots, and
Normal Duration of Surface Currents in Lunar Hours.

	Velocity at Strength		Duration Lunar Hours	
	Ebb	Flood.	Ebb	Flood.
The Narrows	2.1	1.8	6.7	5.3
Hudson River, off 39th Street	3.0	2.0	6.7	5.3
East River, Brooklyn Bridge	3.8	3.6	6.6	5.4
off 11th Street	3.0	2.9	6.1	5.9
" 31st Street	2.9	2.6	6.0	6.0
at Hell Gate	4.8	4.7	5.9	6.1
off Old Ferry Point	1.3	1.3	5.8	6.2
Kill van Kull, off Port Richmond	2.2	1.9	6.3	5.7
0.1 mile S. of Bergen Point	2.0	1.8	6.4	5.6
Harlem River, off 114th Street	1.0	1.0	5.9	6.1
600 ft. N. of High Bridge	1.9	1.8	6.0	6.0

The durations of slack-water are not the same in all parts of the harbor, nor does the current change at the same time in all parts of a section. The slack-water periods are included in the duration of the currents which add to 12 lunar hours.

CURRENTS AT EACH LUNAR HOUR.

The currents which exist in the harbor at each lunar hour of a tidal cycle are given below. The directions of the currents were chiefly obtained from the float experiments of the Metropolitan Sewerage Commission and from curves given on Figures. Other observations were also made for purposes of verification.

One lunar hour equals 1.03505 solar hours.

At Governor's Island, high-water occurs 8 hours and 4 minutes (solar) after transit of moon. Low-water, 2 hours and 8 minutes (solar) after transit.

I Lunar Hour. The water is flowing out of the Upper Bay through the Narrows, toward the sea; into the Upper Bay through the Kill van Kull, the East River and the Hudson River; and the water level in the Upper Bay is falling.

II Lunar Hour. The water is flowing out of the Upper Bay, through the Narrows, toward the Sea; flowing into the Upper Bay through the East River and the Hudson River, the Kill van Kull is nearly slack; and the water in the Upper Bay at about mean low-water.

III Lunar Hour. The water is flowing out of the Upper Bay, through the Narrows toward the sea; out of the Upper Bay through the Kill van Kull, flowing into the Upper Bay through the East River and the Hudson River; and the water in the Upper Bay is rising.

IV Lunar Hour. The water is flowing into the Upper Bay, through the Narrows, from the sea; into the Upper Bay from the Hudson River; out of the Upper Bay and Hudson River into the East River; out of the Upper Bay into the Kill van Kull; and the water in the Bay is rising.

V Lunar Hour. The water is flowing into the Upper Bay, through the Narrows, from the sea; the Hudson River is nearly slack; flowing out of the Upper Bay through the East River and the Kill van Kull; and the water in the Bay is rising.

II Inner Hour. The water is flowing into the Upper Bay, through the Narrows, from the sea; flowing out of the Upper Bay through the Hudson River, East River and Kill van Kull; and the water in the Bay is rising.

III Inner Hour. The water is flowing into the Upper Bay, through the Narrows, from the sea; flowing out of the Upper Bay through the Hudson River, East River, and Kill van Kull; and the water in the Bay is rising.

IV Inner Hour. The water is flowing into the Upper Bay, through the Narrows, from the sea; flowing out of the Upper Bay through the East River and the Hudson River; the Kill van Kull is nearly slack; and the water in the Bay is at about mean high water.

V Inner Hour. The water is flowing into the Upper Bay, through the Narrows, from the sea, and through the Kill van Kull; flowing out of the Upper Bay through the Hudson River and the East River; and the water in the Bay is falling.

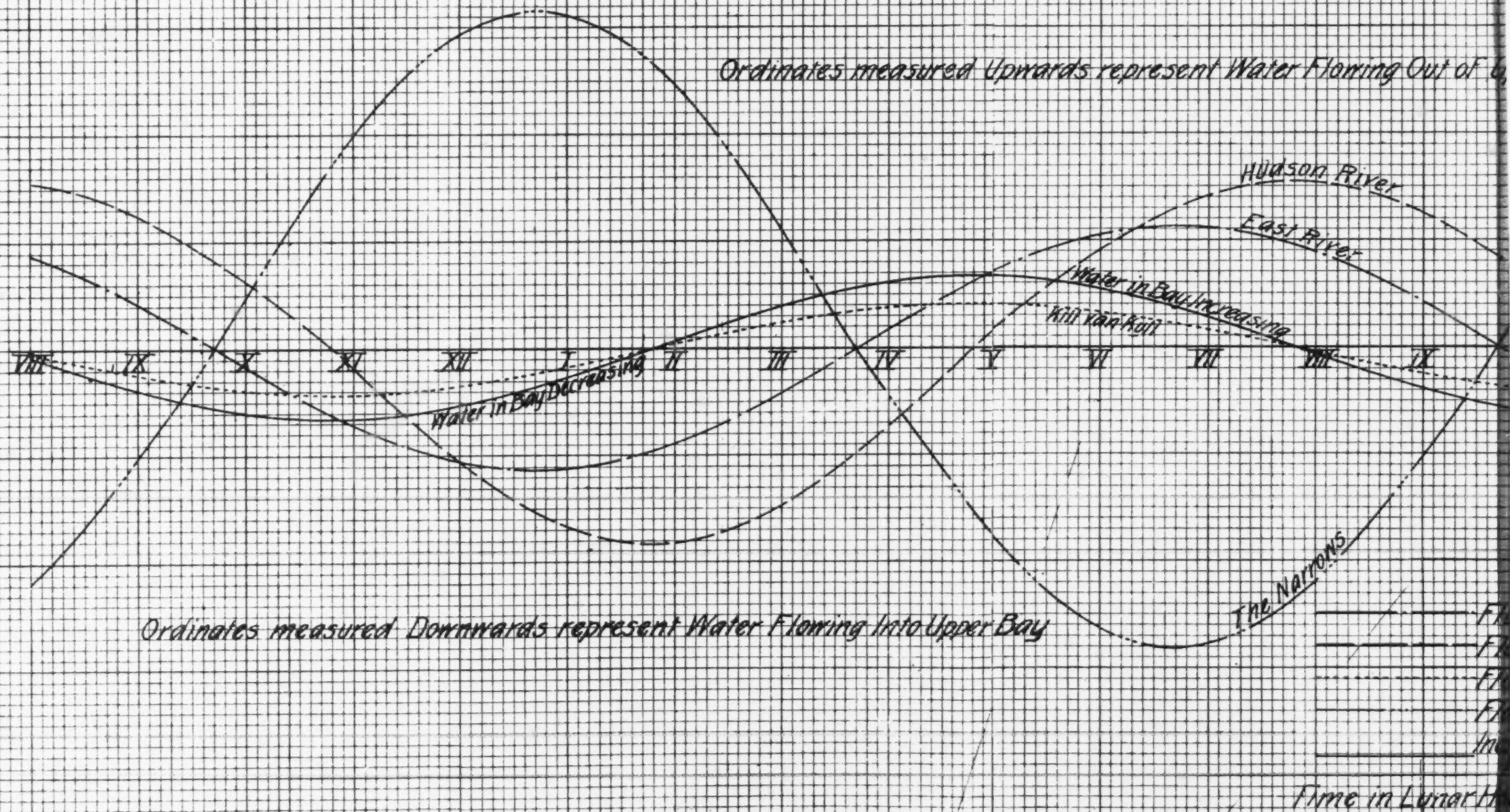
VI Inner Hour. The water is flowing out of the Upper Bay, through the Narrows, toward the sea; out of the Upper Bay, and the East River through the Hudson River; into the Upper Bay and Hudson River through the East River; into the Upper Bay through the Kill van Kull; and the water in the Bay is falling.

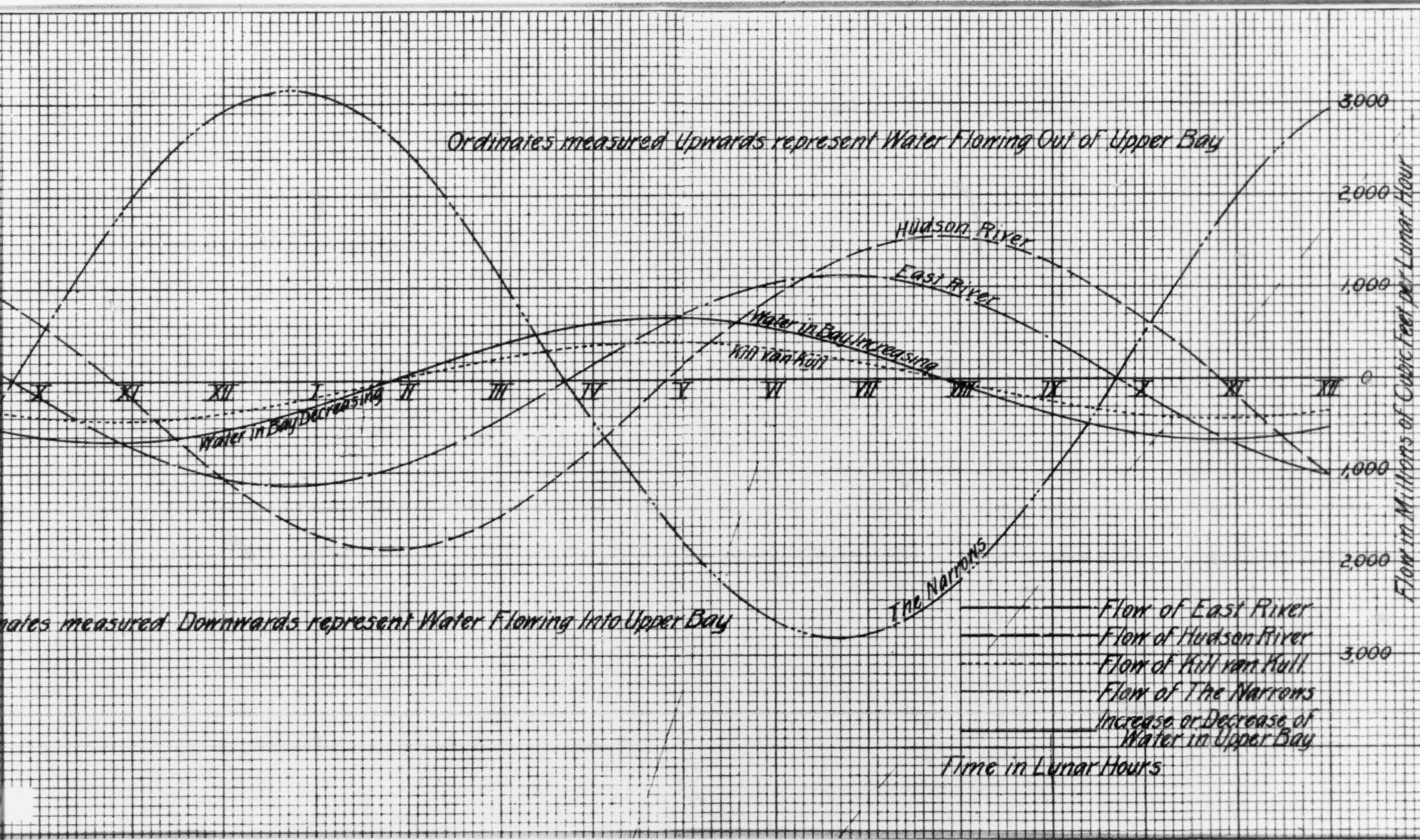
VII Inner Hour. The water is flowing out of the Upper Bay, through the Narrows, toward the sea; the Hudson River is nearly slack; flowing into the Upper Bay through the East River and the Kill van Kull; and the water in the Bay is falling.

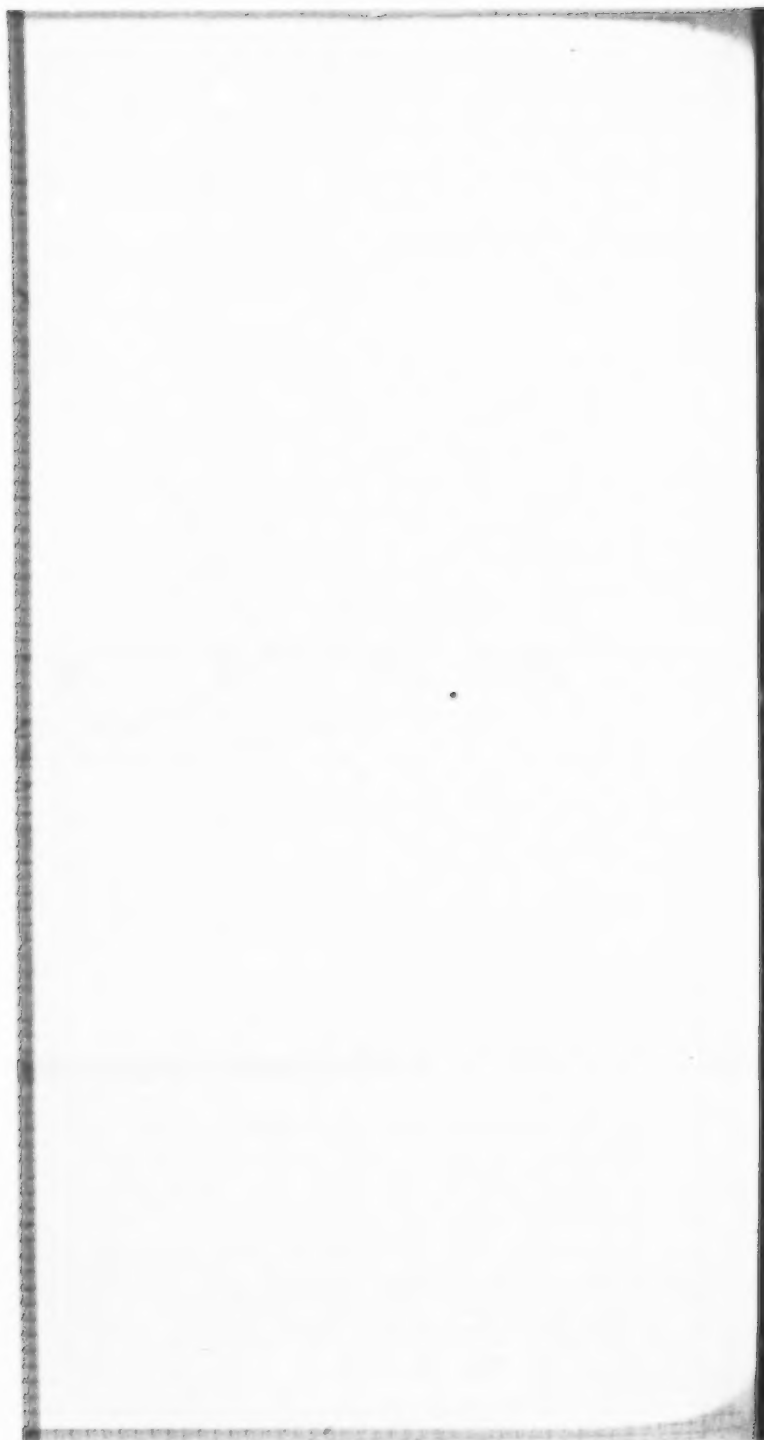
VIII Inner Hour. The water is flowing out of the Upper Bay, through the Narrows, toward the sea; into the Upper Bay through the Hudson River, East River and Kill van Kull; and the water in the Bay is falling.

*Tidal Volumes in Cubic Feet
Estimates of Volumes of Ebb and Flood Currents
Harbor of New York*

	The Narrows between Fats Hamilton	Hudson River off 39 th St. Manhattan	East River off Barclay Bridge	East River off E. 11 th St. Manhattan	East River off E. 31 st St. Manhattan	East River off E. 81 st St. Manhattan	East River off Old Ferry Point	The Kill van Kull off Port Richmond	The Kill van Kull John Constable Point & near Brighton	Harlem River off 144 th St. Manhattan	Harlem River Section 600' North of High Bridge
1 Width of section in feet	5,280	3,900	1,500	2,235	3,180		3,080	1,380		460	410
2 Average depth below M.H.L. in feet	61.0	37.44	44.20	36.13	39.07		43.88	28.30		15.67	11.71
3 Area of Section, square feet	322,000	144,000	66,300	80,750	124,250		131,650	39,060	38,475	7,210	4,800
4 Avg Velocity of surface water ft./sec.	1.34	1.86	2.42	1.91	1.13		0.88	1.48		0.71	1.30
5 " " " " " Flood tide	1.17	1.26	2.22	1.85	1.29		1.09	1.24		0.69	1.22
6 " " " " " Mean tide	1.255	1.56	2.32	1.88	1.21		0.985	1.36		0.70	1.26
7 " " " " "	7,631	9,485	14,105	11,430	7,357		5,989	8,269		4,256	7,661
8 Gpf traverse (7) / cross sectional vol.	0.75	0.75	0.75	0.75	0.75		0.75	0.75		0.75	0.75
9 Volume cross-sectional vol. in cu. ft per solar hour	5,723	7,113	10,504	8,572	5,518		4,491	6,202		3,192	5,746
10 Mean rate of flow through section in cubic feet per solar hour in millions, (3) x (9)	1,837	1,038	696.5	692.2	685.6		591.3	242.2		23.01	27.58
11 Number of solar hours in 6 months	6.21	6.21	6.21	6.21	6.21		6.21	6.21		6.21	6.21
12 Mean volume flowing over sill and flood currents in millions of cubic feet, (10) x (11)	11,410	6,447	4,330	4,299	4,258		3,672	1,502	1,600	142.9	171.2
13 Mean yearly discharge of land water from off shore of lower house in millions of cubic feet.	591.2	543.6						44.1	44.1		
" " " " " East House 80 ft. au ft.	671.2		80	80	80	80	80				
Average Volume flowing through section in millions of cubic feet per tide											
14 On ED's	12,041.2	6,990.6	4,370	4,339	4,298	3,970	3,712	1,546.1	1,644.1	151.8	179.8
15 On F1000	10,778.8	5,903.4	4,290	4,259	4,218	3,890	3,632	1,457.9	1,555.9	134.0	162.6







TIDAL VOLUMES.

Estimates of the volumes flowing on the tides past various sections of the harbor were made, chiefly based on investigations of the Metropolitan Sewerage Commission. These estimates agree with those of the U. S. Coast and Geodetic Survey.

Average Volumes in Million Cubic Feet.

	Ebb.	Flood.	Resultant.
The Narrows	12,041.2	10,778.8	1,262.4
Hudson River, West 39th Street	6,990.6	5,903.4	1,087.2
East River, Brooklyn Bridge	4,370.0	4,290.0	80.0
Kill van Kull, New Brighton	1,644.1	1,555.9	88.2

Ex. 91 - P. 6

(Here follows sheets of Tidal Volumes in Cubic Feet,
marked Ex. 91, pp. 7 and 8.)



The quantity of "new" sea-water entering Upper Bay is:-

	In million cu.ft.pertidal cycle
At the Narrows - Average for year	2,210
Least amount (February)	670
Least amount (Summer-August)	1,520

These figures were determined from daily observations by the salinometer, the records covering a period of over one year as made by the Metropolitan Sewerage Commission. The average of these observations is appended.

If no land-water entered the harbors then the water in the harbor would be as salty as that of the sea. The mean quantity of water flowing on ebb tide was divided into land and sea-water by means of the salinometer percentages. The land-water was then divided into "land-water which will return" and "land-water which will not return". The latter was taken as the run-off of the rivers for 12 lunar hours and the former as the remainder of the total land-water as shown by the salinometer.

The sea-water as shown by the salinometer was then divided by making the "sea-water which will not return" the same proportion of the total sea-water as the "land-water which will not return" is to the total land-water. This is so because the land and sea-waters are mixed, and the amount of "land-water which will not return" will take with it its proportionate amount of sea-water.

The division of water on flood tide was made by taking the total volume of flow on flood and laying off the amounts of land and sea-water which will return as shown on ebb. The remainder is the "new" sea-water, or the water which was not in the harbor on the preceeding tide. It must be equal to the "sea-water which will not return" as given on ebb.

The land-water as shown by the salinometer is always in excess of the run-off. This is so because the flushing action of the harbor is not complete, as at the end of every ebb tide there remains some land-water in the harbor. The amount remaining, which is the amount in excess of the run-off, is variable, due to the seasonal variations.



The amount of "sea and land-water which will not return" is not a large proportion of the amount of water flowing on an ebb tide. There is always a large amount of "water which will return" on the succeeding flood tide.

The amount of new sea-water is never a large proportion of the total amount flowing on a flood tide. This "new sea-water" is only new off places situated near the ocean and not new at such places as the Upper Bay, Hudson River, East River, or Newark Bay. At these places the "new sea-water" is really water which has not been at the place on a previous tide, but which comes from some other part of the harbor.

The water which causes the seaward trend is the amount of land-water flowing from the water-sheds above. For places near the ocean, this seaward trend is increased by some "sea-water which will not return;" but for places situated well within the harbor such "sea-water which will not return" is replaced by sea-water as explained above, which comes from some other part of the harbor and is not clean ocean water.

The "sea-water which will return" is always greatest during the summer months and is least during the spring months.

The "sea and land-water which will not return" is least during February and the summer months, and greatest during the spring and autumn months.

Ex. 91 - P. 10

*

(Here follows sheet showing Summary of Salinometer Records, marked Ex. 91, p. 11.)

Percentages of Land Water at the Surface.
Corrected for Temperature 60°

1909.

	Jan.			Feb.			Mar.			Apr.			May.			June			July			Aug.			Sept.			Oct.			Nov.			Dec.			Averages for year.		
	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In	All	Out	In
Ambrose Channel	1.3			6.8			10.2			10.8			15.6			13.0			6.9			7.2			6.8			6.0			4.6			4.6			7.6		
West Bank	12.3	127	18.3	34.2	35.9	33.4	36.0	31.5	34.7	48.1	44.3	45.6	42.2	41.7	41.6	27.9	28.5	27.3	17.3	17.1	17.5	18.4	17.6	12.4	16.7	16.6	16.0	15.7	15.4	16.0	15.2	14.7	15.7	17.5	17.4	17.9	25.2	24.8	24.1
Ft. Wadsworth	29.0	282	30.0	50.1	50.8	52.4	50.4	49.9	51.0	64.9	63.8	67.9	57.1	56.0	61.0	38.4	38.0	37.1	25.5	24.3	28.2	27.5	28.7	30.2	28.3	24.8	32.3	22.2	21.5	25.6	22.7	22.2	23.0	25.3	23.6	27.3	37.2	34.8	37.6
Robbins Reef	24.9	23.9	24.6	42.6	41.8	42.8	43.2	43.3	44.4	56.1	55.6	55.8	52.8	52.5	51.6	34.0	33.6	33.8	21.5	21.1	21.6	21.4	21.6	21.3	18.3	18.3	18.6	19.6	19.3	20.4	19.7	19.7	17.5	22.9	21.3	22.8	31.2	30.4	30.4
Governors Is.	30.9	29.4	33.7	40.5	32.0	43.4	49.3	47.1	49.9	64.0	64.1	67.2	53.1	56.6	61.0	39.5	38.7	38.9	25.3	24.6	27.5	24.9	23.8	26.0	22.2	19.7	24.9	24.7	22.8	27.0	25.1	24.1	26.4	30.0	28.1	32.5	36.4	34.6	37.0
Blackwells Is.	26.8	26.6	26.1	35.9	36.9	34.6	37.8	39.0	37.6	45.4	45.3	44.9	47.9	41.7	42.9	33.7	34.0	33.4	27.7	26.8	28.2	25.6	26.5	24.4	24.1	24.3	23.8	25.6	25.2	26.2	24.2	24.5	23.8	25.7	25.6	25.8	31.9	31.9	31.9
Great Beds	31.7	33.1	29.2	47.1	49.5	44.1	46.5	48.6	41.6	58.2	63.4	57.0	63.6	65.5	60.7	37.6	38.9	36.1	28.7	29.3	28.0	27.6	31.4	27.1	26.2	26.4	25.9	23.9	24.5	23.4	24.9	25.0	24.9	23.6	23.2	24.9	34.8	37.2	34.6
Passaic Light	65.8	63.8	67.9	82.2	81.0	84.0	83.4	83.6	83.3	90.6	90.3	90.9	86.3	85.7	84.8	67.2	66.3	67.8	47.0	50.0	51.8	52.6	52.2	53.0	47.8	47.3	48.3	46.1	46.2	46.1	45.3	44.6	45.8	57.6	56.0	57.0	64.2	63.8	64.9
Ft. Washington Pt.	42.2	40.7	43.2	53.3	53.2	53.7	64.0	63.5	64.0	74.7	74.7	75.1	70.6	70.7	70.5	74.5	74.4	74.7	54.0	56.0	55.7	51.8	52.4	50.6	48.8	43.0	48.3	50.4	49.5	50.8	47.4	47.7	48.4	53.7	53.0	54.4	64.3	68.3	65.1
Tarrytown	84.6	84.8	84.5	91.2	91.4	91.0	90.6	90.6	90.7	100.0	100.0	100.0	99.9	99.8	99.9	93.1	93.4	92.8	80.2	80.4	80.0	74.4	75.2	73.7	73.0	73.5	72.6	73.8	74.4	73.4	73.4	73.5	73.3	76.4	76.5	76.3	85.3	85.7	84.9
Throgs Neck	15.9	15.8	16.0	12.9	13.8	18.7	20.8	21.2	20.7	23.8	23.5	24.2	24.3	24.0	24.5	21.3	21.4	21.2	18.1	18.2	18.0	17.3	17.7	17.0	17.1	16.9	17.4	15.5	15.0	15.9	13.2	13.3	13.2	11.6	11.4	11.7	18.1	18.2	18.1
RAINFALL, Percent above or below normal	-6%			+32%			-23%			+61%			-36%			+13%			-53%			+14%			-11%			-74%			-47%			+9%			-12%		

Ex. 91 - P. 11

Throgs Neck: West currents - in.

All means average of Ebb, Flood and Slack Water observations.

Out - - - Ebb observations.

In - - - Flood observations.

* Average of Precipitation at Albany, Carmel, New York City, Happinger's Falls and West Point, from Climatological Report, U.S. Weather Bureau.

TABLE

The Narrows.

Division of Sea and Land Water in Ebb Current by Months,
Figures in Millions of Cubic Feet during Ebb Current §

MONTH.	Land Water		Sea Water		Total Ebb Flow.
	which will return	which will not return	which will return	which will not return	
January	2,520	880	4,400	2,240	12,040
February	3,430	680	3,250	670	12,040
March	3,510	2,500	3,830	2,910	12,040
April	4,610	2,990	3,100	1,740	12,040
May	3,600	1,340	4,150	1,050	12,040
June	3,460	1,090	3,480	1,780	12,040
July	2,250	700	6,930	2,180	12,040
August	2,840	620	7,060	1,880	12,040
September	2,280	710	6,900	2,180	12,040
October	1,600	980	5,640	3,610	12,040
November	1,760	910	6,180	3,190	12,040
December	1,770	1,070	5,730	3,470	12,040
Average for Year§	3,010	1,180	5,640	2,210	12,040

§ Shown graphically on Diagram

§ Average of daily readings.

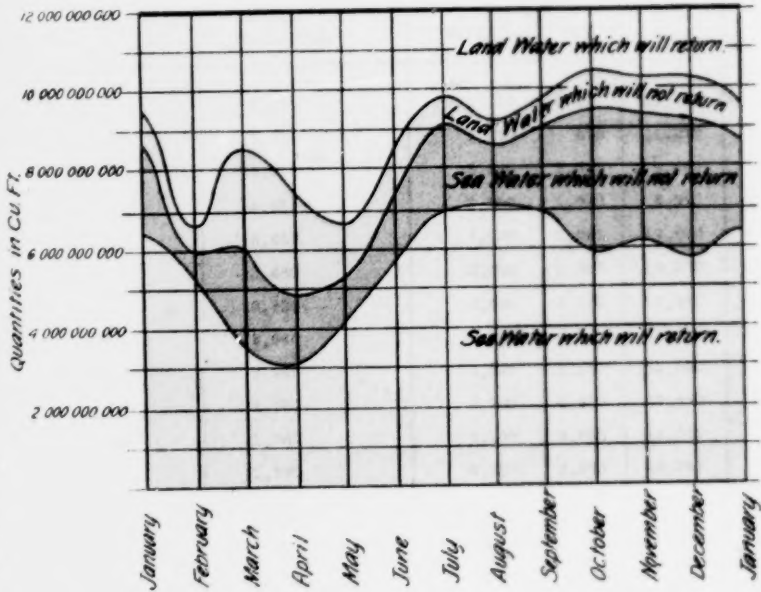
Ex. 91 - P. 12

3399



THE NARROWS
Division of Sea and Land Water by Months
from Salinometer Records made by The Metropolitan Sewerage Commission.

EBB CURRENT.



Ex. 91 - P. 13



TABLE
The Narrows.

Division of Sea and Land Water in Flood Current by Months
Figures in Millions of Cubic Feet during Flood Current ϕ

MONTH	Land Water Returning.	Sea Water		Total Flood Flow.
		Returning.	New.	
January	2,320	6,320 [#]	2,240	11,080
February	5,430	5,170	670	11,270
March	3,510	3,440	2,510	9,460
April	4,610	3,020	1,740	9,370
May	5,400	4,170	1,050	10,620
June	3,480	5,610	1,780	10,870
July	2,230	6,850	2,130	11,260
August	2,840	6,980	1,520	11,340
September	2,280	6,820	2,150	11,250
October	1,600	5,760	3,610	10,970
November	1,760	6,100	3,190	11,050
December	1,770	6,650	3,470	10,890
Average for Year [#]	3,010	5,560	2,210	10,780

ϕ Shown graphically on Diagram

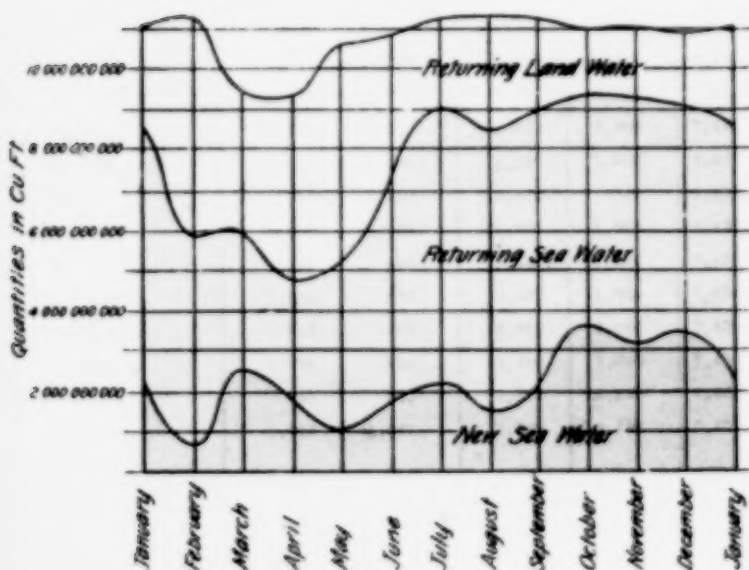
Average of daily readings.

These figures are 80,000,000 cubic feet less than the "Sea-water which will return" as given in Table because this is the mean resultant flow through the East River.



*THE NARROWS.
Division of Sea and Land Water by Months
from Salinometer Records made by The Metropolitan Sewerage Commission.*

FLOOD CURRENT



EX. 91 - P. 15

TABLE

Hudson River, off The Battery.

Division of Sea and Land Water in Ebb Current by Months

Figures in Millions of Cubic Feet during Ebb Current †

MONTH.	Land Water		Sea Water		Total Ebb Flow
	which will return.	which will not return.	which will return	which will not return.	
January	1,370	810	3,300	1,950	7,430
February	2,250	640	3,530	1,000	7,430
March	1,350	2,300	1,400	2,380	7,430
April	2,090	2,380	1,380	1,580	7,430
May	2,980	1,230	2,280	940	7,430
June	1,880	1,000	2,970	1,580	7,430
July	1,190	640	3,640	1,960	7,430
August	1,200	570	3,830	1,830	7,430
September	810	650	3,310	2,660	7,430
October	740	910	2,650	3,090	7,430
November	950	840	2,990	2,650	7,430
December	1,010	1,080	2,580	2,760	7,430
Average for Year†	1,480	1,090	2,800	2,060	7,430

† Shown graphically on Diagram

‡ Average of daily readings.

TABLE

Hudson River, off The Battery.

Division of Sea and Land Water in Flood Current by Months
Figures in Millions of Cubic Feet during Flood Current §

MONTH.	Land Water Returning.	Sea Water		Total Flood Flow
		Returning.	New.	
January	1,370	3,500	1,850	5,350
February	2,860	3,550	1,000	6,760
March	1,350	1,400	2,560	5,130
April	2,090	1,380	1,980	5,050
May	2,940	2,280	940	6,200
June	1,880	2,970	1,380	6,230
July	1,190	3,640	1,940	6,770
August	1,200	3,830	1,830	6,860
September	810	3,310	2,640	6,760
October	980	2,050	3,090	6,120
November	950	2,990	2,650	6,590
December	1,010	2,880	2,760	6,650
Average for Year#	1,480	2,800	2,080	6,360

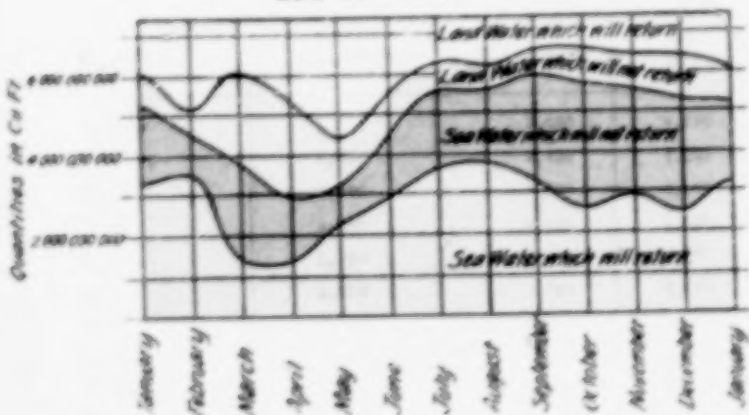
§ Shown graphically on Diagram

Average of daily readings.

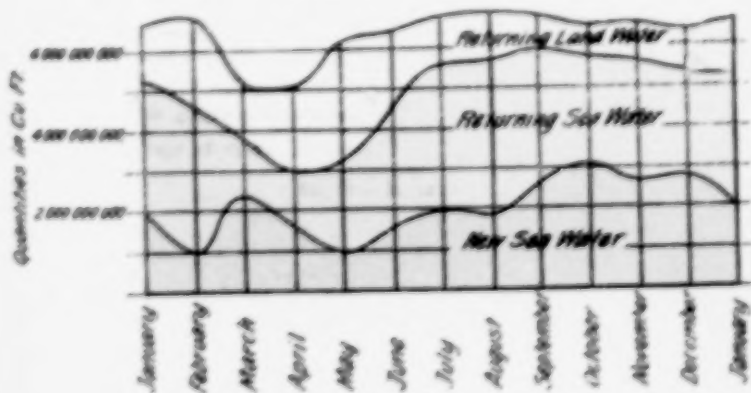
Ex. 91 - P. 17

HUDSON RIVER OFF THE BATTERY
Division of Sea and Land Water by Months
From Salinometer Records made by The Metropolitan Sewerage Commission

EBB CURRENT



FLOOD CURRENT



TABLE

East River, off Blackwell's Island

Division of Sea and Land Water in Ebb Current by Months

Figures in Millions of Cubic Feet during Ebb Current §

MONTH.	Land Water.	Sea Water.	Total Ebb Flow.
January	1,100	3,050	4,150
February	1,530	2,620	4,150
March	1,580	2,570	4,150
April	1,680	2,270	4,150
May	1,730	2,420	4,150
June	1,410	2,740	4,150
July	1,110	3,040	4,150
August	1,100	3,050	4,150
September	1,010	3,140	4,150
October	1,050	3,100	4,150
November	1,020	3,130	4,150
December	1,060	3,090	4,150
Average for Year#	1,320	2,830	4,150

§ Shown graphically on Diagram

Average of daily readings.

TABLE

East River, off Blackwell's Island

Division of Sea and Land Water in Flood Current by Months

Figures in Millions of Cubic Feet during Flood Current †

MONTH.	Land Water.	Sea Water.	Total Flood Flow.
January	1,060	3,010	4,070
February	1,410	2,660	4,070
March	1,530	2,540	4,070
April	1,830	2,240	4,070
May	1,750	2,320	4,070
June	1,360	2,710	4,070
July	1,150	2,920	4,070
August	990	3,080	4,070
September	970	3,100	4,070
October	1,070	3,000	4,070
November	970	3,100	4,070
December	1,050	3,020	4,070
Average for Year†	1,300	2,770	4,070

‡ Shown graphically on Diagram

† Average of daily readings.

*EAST RIVER, OFF BLACKWELLS ISLAND
Division of Sea and Land Water by Months
From Salinometer Records made by The Metropolitan Sewerage Commission.*

EBB CURRENT



FLOOD CURRENT



TABLE
NEWARK BAY.

Division of Sea and Land Water in Ebb Current by Months
Figures in Millions of Cubic Feet during Ebb Current.

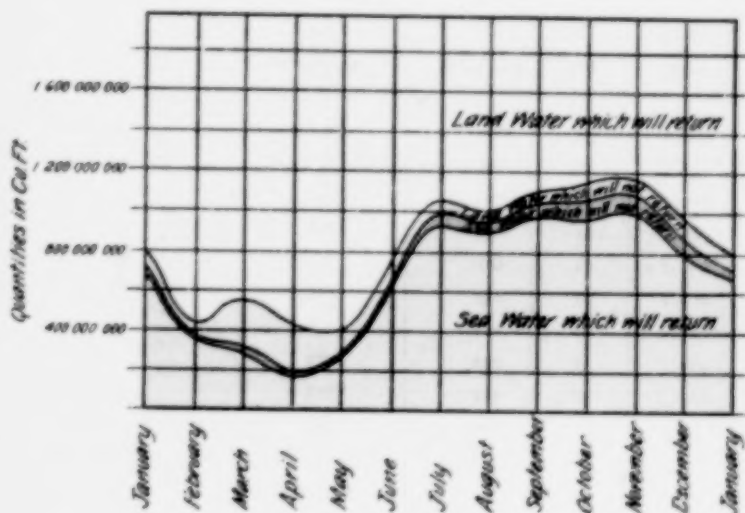
MONTH.	Land Water.		Sea Water.		Total Ebb Flow.
	which will return	which will not return	which will return	which will not return	
January	1,179	79	669	45	1,972
February	1,535	62	360	15	1,972
March	1,424	223	281	44	1,972
April	1,549	231	167	25	1,972
May	1,570	120	262	20	1,972
June	1,210	97	616	49	1,972
July	924	62	924	62	1,972
August	973	56	892	51	1,972
September	870	63	959	70	1,972
October	823	88	959	102	1,972
November	799	81	992	100	1,972
December	999	105	785	83	1,972
Average for Year	1,182	106	654	60	1,972

Shown graphically on Diagram

Average of daily readings.

NEWARK BAY
Division of Sea and Land Water by Months
from Salinometer Records made by The Metropolitan Sewerage Commission

EBB CURRENT



TABLE

Newark Bay

Division of Sea and Land Water in Flood Current by Months

Figures in Millions of Cubic Feet during Flood Current †

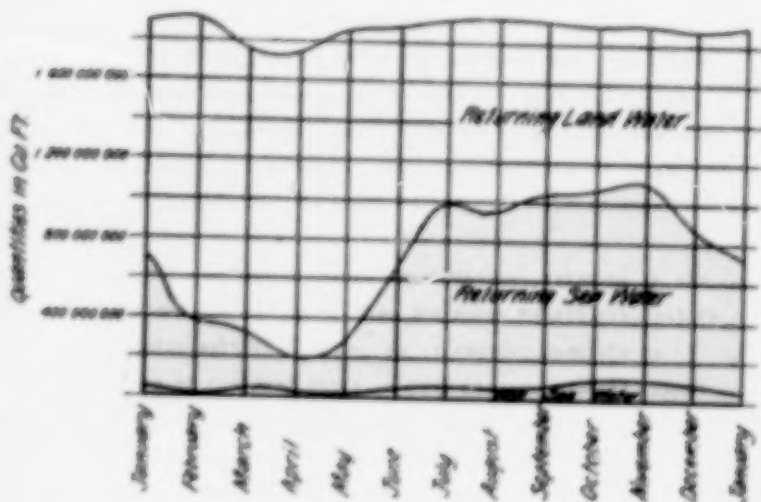
MONTH.	Land Water Returning.	Sea Water		Total Flood Flow.
		Returning.	New.	
January	1,179	669	45	1,990
February	1,035	360	15	1,910
March	1,424	261	46	1,749
April	1,549	167	35	1,741
May	1,970	262	20	1,992
June	1,210	616	49	1,975
July	924	924	82	1,930
August	973	892	81	1,946
September	870	949	70	1,909
October	625	959	102	1,686
November	799	992	100	1,891
December	999	765	63	1,827
Average for Year‡	1,168	644	57	1,866

† Shown graphically on Diagram

‡ Average of daily readings.

NEWARK BAY
Division of Sea and Land Water by Months
from Salinometer Records made by The Metropolitan Sewerage Commission

FLOOD CURRENT

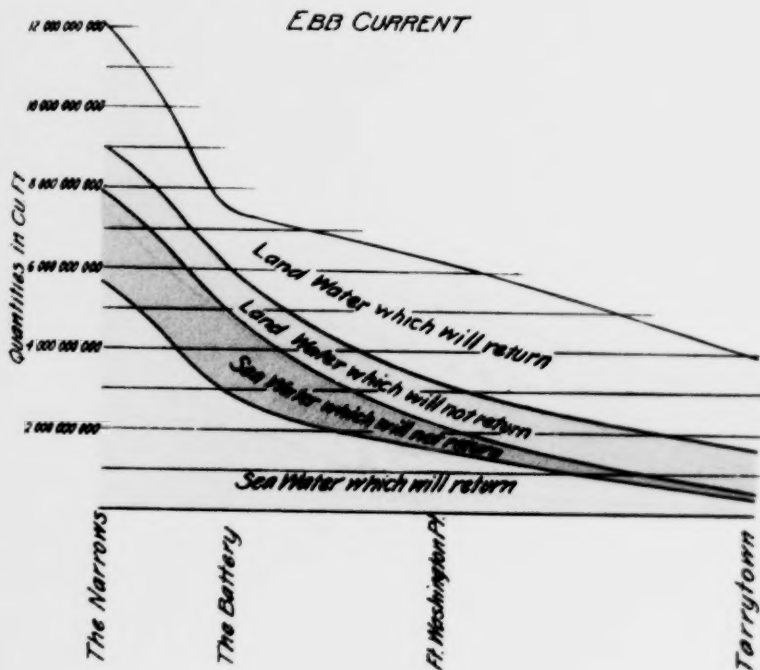


In addition to the preceding work which shows the divisions of land-water and sea-water at various places in the harbor, the following diagrams were made to show these changes geographically. That is, the information was plotted on the diagrams by locating the distances between the different places as abscissae and the mean tidal flows in cubic feet as ordinates.

In order to show the variation from mean conditions additional diagrams were constructed to show the division of land and sea-water during August and April when the minimum and maximum amounts of land-water are flowing. This work was done by using the salinometer records for the month recorded instead of the mean record for the year.

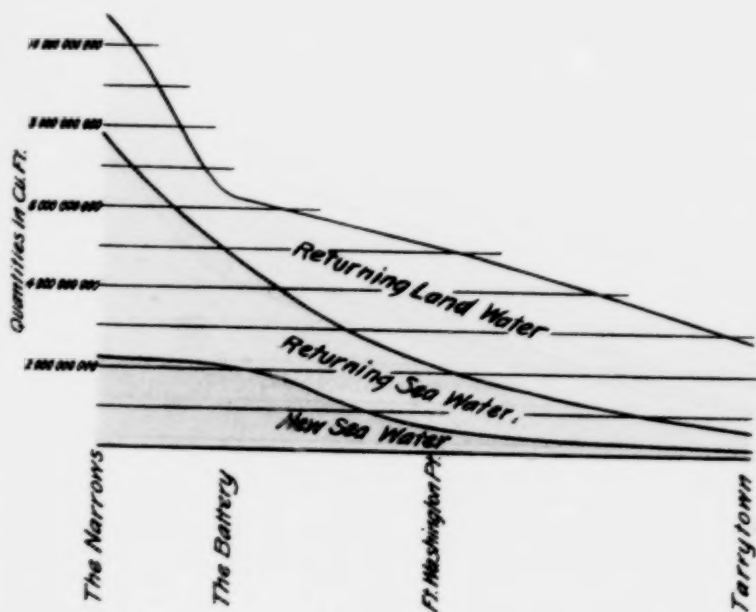
The diagrams showing the conditions existing in the East River were not divided up to show the water "which will return" and the water which will not return, as it was not possible to divide the waters of the East River in this manner, because, first the East River is a strait, open at both ends to bodies of salt water, and secondly, because the water sheds draining into the East River were so small that if a division had been attempted the divisions of "land-water which will not return" would be so small as hardly to appear thicker than a line on the diagrams.

UPPER BAY AND HUDSON RIVER.
Division of Sea and Land Water
when Average Land Water is Flowing
from Salinometer Records made by The Metropolitan Sewerage Commission

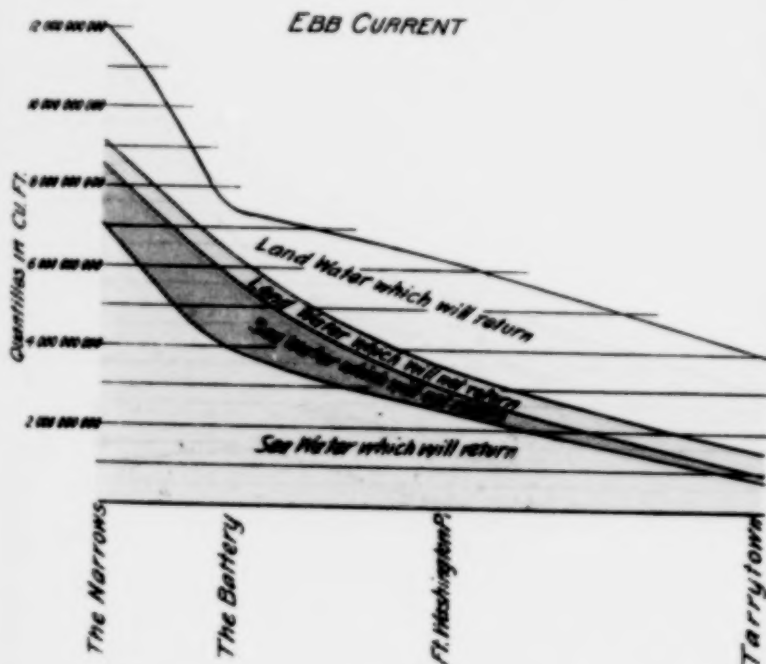


UPPER BAY AND HUDSON RIVER.
Division of Sea and Land Water
When Average Land Water is Flowing
From Salinometer Records made by The Metropolitan Sewerage Commission

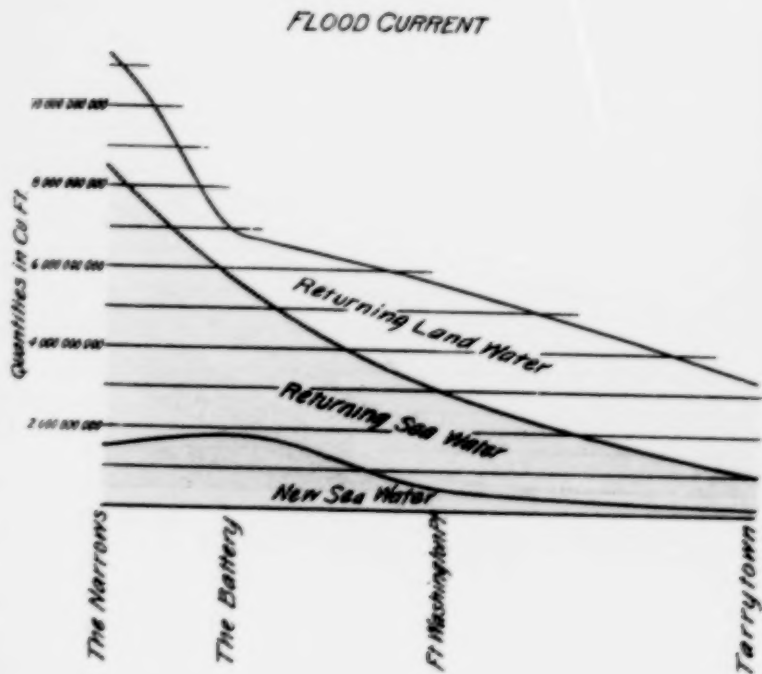
FLOOD CURRENT



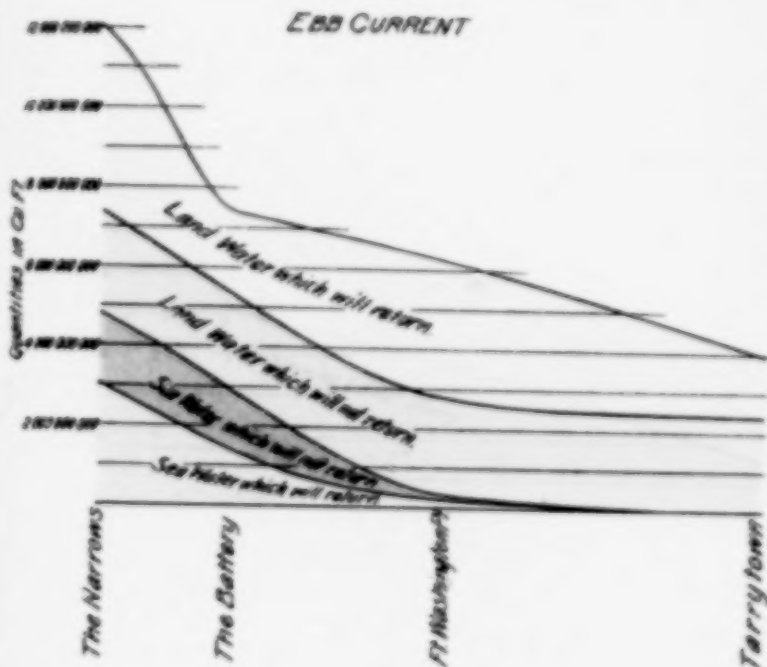
UPPER BAY AND HUDSON RIVER
Division of Sea and Land Water
during August when Minimum Land Water is Flowing
from Salinometer Records made by The Metropolitan Sewerage Commission



UPPER BAY AND HUDSON RIVER.
Division of Sea and Land Water
during August when Minimum Land Water is Flowing
from Salinometer Records made by The Metropolitan Sewerage Commission

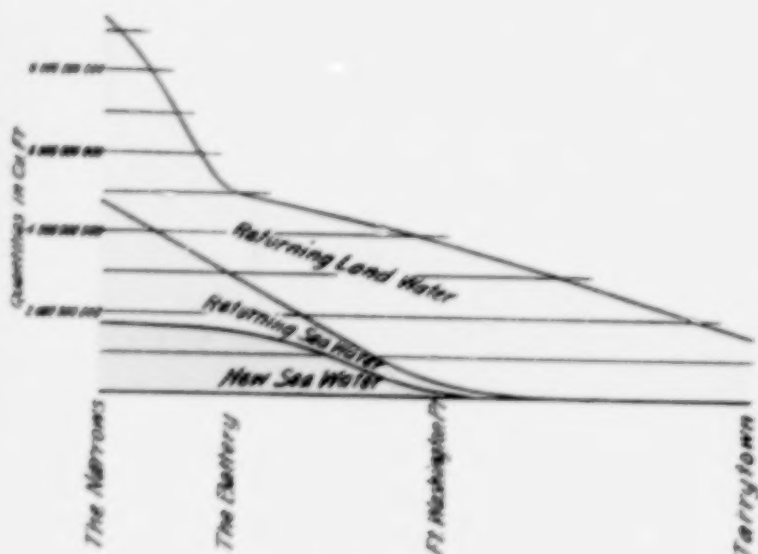


UPPER BAY AND HUDSON RIVER.
Division of Sea and Land Water
during April when Maximum Land Water is Flowing
from Salinometer Records made by The Metropolitan Sewerage Commission



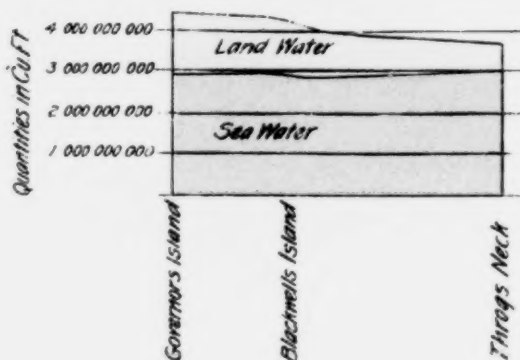
UPPER BAY AND HUDSON RIVER
Division of Sea and Land Water
during April when Maximum Land Water is Flowing
from Salinometer Records made by The Metropolitan Sewerage Commission.

FLOOD CURRENT

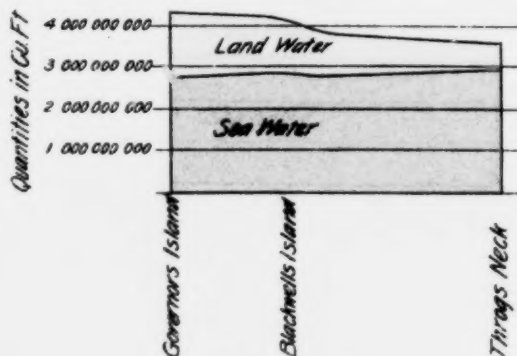


*EAST RIVER
Division of Sea and Land Water
when Average Land Water is Flowing
from Salinometer Records made by The Metropolitan Sewerage Commission.*

EBB CURRENT

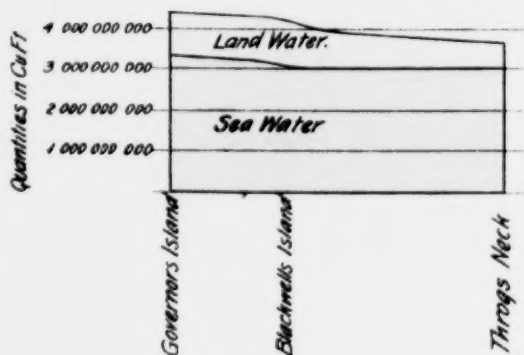


FLOOD CURRENT

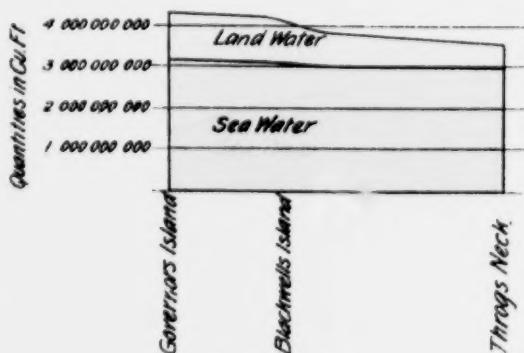


EAST RIVER
Division of Sea and Land Water
during August when Minimum Land Water is Flowing
from Salinometer Records made by The Metropolitan Sewerage Commission.

EBB CURRENT

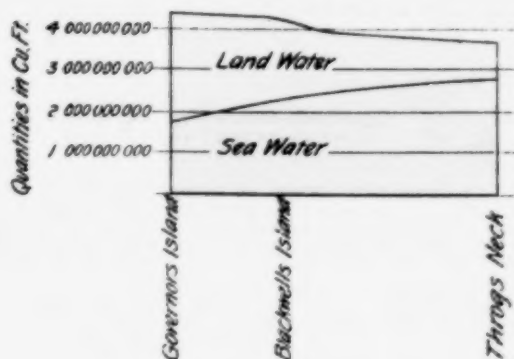


FLOOD CURRENT

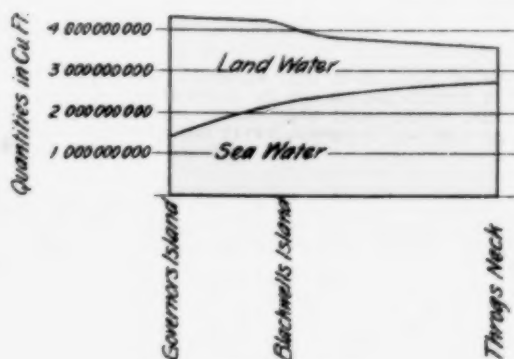


EAST RIVER
 Division of Sea and Land Water
 during April, when Maximum Land Water is Flowing
 from Salinometer Records made by The Metropolitan Sewerage Commission.

EBB CURRENT



FLOOD CURRENT



In the Upper Bay the quantities of new sea and land-water available for dilution of sewage are as follows:-

	In Million Cu.Ft. per Tidal Cycle.		
	New Sea-Water.	New Land-Water.	Total.
Average for year	2,210	1,180	3,390
Least amount (February)	670	690	1,360
Least amount (Summer-August)	1,520	620	2,140

If the quantity of water available for dilution of sewage is taken as the resultant flow through The Narrows, then the quantities are

	In Million Cu.Ft. per Tidal Cycle.	
Average for year		1,260
Least amount (Winter-February)		770
Least amount (Summer-August)		700

The course followed by sewage discharged at Robbins Reef would be similar to those shown by the float experiments made by the Metropolitan Sewerage Commission. The paths of these floats are given in diagrams in the Report of the Commission, dated 30th April, 1910.

The floats show that the currents oscillate with the tides. On flood tides the sewage is liable to travel about 6 miles, and on ebb about 10 miles.

A particle set adrift off Robbins Reef in the main channel on flood tide would take four tidal cycles to remain outside of Sandy Hook; and if started on ebb tide would take three cycles. It would take two tidal cycles for the particle to remain outside of the Narrows if started on flood and one cycle if started on ebb. All these estimates are based on the assumption that the particle will remain in the sea-ward trend of the current and not get delayed by cross currents.

The effect of undertun.

When the tidal currents turn from flood to ebb or from ebb to flood, the inertia of the moving stream plays a very important part. The turn of the tide takes place first along the shore. In The Narrows, the first change of current appears on the east side of the channel.

As the specific gravity of the sea outside of New York bar is about 1.024, the sea-water is approximately $2\frac{1}{4}\%$ heavier than the fresh water discharged from the rivers. As the tide

there is a tendency for this lighter fresh water to flow out over the top of the incoming heavier salt water. There also is a tendency, largely due to inertia, for the formation of top and bottom currents flowing in opposite directions, and for side currents flowing contrarywise to the channel current. Consequently an "underrun" is formed. This term is distinctly applied to the current that predominates along the bed of a channel in the opposite direction to that flowing on the surface at the same time.

The "underrun" of salt water up the Hudson River extends above Poughkeepsie, where the water is often found brackish, during those seasons when the river discharge of land-water is small.

Ex. 91 - P. 39

COMPLAINANT'S EXHIBIT NO. 62. James G. Mather, Complainant.
Current observations Near Robbins Reef.
 August 25th 1900.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 fms.	Velocity, feet per second.	Wind.
10-48-10	5'	250°	West New Brighton.....	3-35	.3	Faint S. W. breeze.
10-53-45	20'	40°	Hudson R.....	2-50	.50	
10-53-10	20'	40°	Hudson R.....	1-40	1.45	
10-57-30	40'	45°	Battery.....	7-20	.222	
10-58-40	5'	255°	100' S. of Robbins R.....	2-45	.61	
11-00-00	20'	20°	Liberty.....	1-05	1.58	
11-05-10	40'	45°	Pier A.....	3-57	.400	
11-11-07	5'	240°	Inner end P. R. R. Fst. Term. of Breakwater, Rutherford Channel.....	1-57	.85	Calm.
11-12-10	20'	60°	Hudson R.....	1-20	1.11	
11-21-57	40'	40°	Hudson R.....	5-15	.52	
11-23-00	5'	335°	P. R. R. Fst. Term. Fst. Ferry House, Hudson R.....	2-00	.57	
11-25-00	20'	40°	Hudson R.....	1-25	1.2	
11-30-00	40'	45°	Pier A.....	3-15	.51	
11-35-15	5'	255°	1,000' S. of P. R. R. Fst. Ferry Term.	3-15		
11-35-27	20'	40°				
11-37-27	40'	45°				
11-40-00	5'	255°				
11-41-23	40'	45°				
11-45-30	5'	255°				
48-45						

Current Observations Near Robbins Reef.

August 23, 1900.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 fms.	Velocity, feet per second.	Wind.
11-51-00	20'	45°	Pier A.....	m. 6. 1-17	1.30	
12-20	40'	40°	Hudson	1-30	1.16	
11-55-00	30'	340°	End of P. R. R. Pier at Breakwater.	2-45	.61	
12-40-00	20'	30°	End N. J. Cent. Pier Communiquay....	1-30	1.25	
12-45-00	40'	20°	Liberty	1-32	1.00	Faint southerly breeze.
12-10-00	5'	40°	Hudson	1-50*	.68	Using 75' line.
12-20-00	20'	45°	Pier A.....	1-19	1.26	
12-27-00	40'	30°	100' E. gas buoy at P. R. R. Term. Channel 62.	1-54	1.31	
12-31-00	30'	30°	100' E. Gas buoy 62 at P. R. R. Term. Channel.	1-47*	.82	5' float with 50' of line from this time on till end of day.
12-37-00	40'	40°	Hudson	1-08	1.47	
12-40-00	41-50			1-13	1.30	" 20' same direction.

* With 75 ft. distance.
9 with 100 ft. distance.

August 25, 1899.—Continued.

Time.	Depth.	Angle from meridian.	Direction towards.	Elapsed time for 100 f. m. S.	Velocity, feet per second.	Wind.
12-45-00	5'	10°	Black Tom Island.....	2-40*	.72	
47-00						
12-50-00	20'	40°	Hudson	1-02	1.61	
51-02						
12-55-00	40'	40°	Hudson	1-15	1.38	
56-15						
1-00-00	5'	30°	Liberty	1-24*	1.04	
01-24						
1-06-00	20'	30°	100' E. of Gas Buoy G2.....	0-56	1.78	
06-56						
1-10-30	40'	40°	Hudson	0-56	1.78	
11-28						
1-15-00	5'	40°	Hudson	1-08*	1.29	
16-08						
1-23-35	20'	40°	Hudson	1-00	1.67	
24-35						
1-25-00	40'	30°	Gas Buoy G2.....	1-31	1.10	
26-31						
1-35-40	5'	20°	1 dist. from Black Tom to Liberty..	1-13*	1.37	
36-53						
1-38-30	20'	25°	W. side Liberty Island.....	1-07	1.40	
38-37						
1-39-05	40'	40°	Hudson	1-20	1.25	
40-36						
1-45-00	5'	30°	Liberty	1-00*	1.33	
46-06						
1-50-00	20'	30°	Liberty	1-17	1.3	
51-17						
1-55-40	40'	25°	W. side Liberty Is.....	1-53	.87	
57-25						

* For length of 55 feet.

Faint southerly
breeze.May have been
slightly retarded by
friction on another
line.

Current Observations Near Robbins Reef.

August 23, 1909.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 f.	Velocity, feet per second.	Wind.
2-10-00 61-40	5'	20°	½ way from Liberty to Black Tom...	<i>m. s.</i> 1-30*	.98	Uranine discharged going in direction between Black Tom and end of P. R. R. Breakwater.
2-05-00 00-30	20'	30°	Liberty	1-30	1.11	
2-10-00 12-02	40'	30°	Liberty	2-02	.82	Uranine toward end P. R. R. Breakwater. Faint S. E. breeze.
2-15-04 16-32	5'	25°	200' W. of Liberty Is.....	1-28*	1.00	
2-20-00	20'	30°	Liberty	1-52	.89	
2-21-52			Hudson	2-10	.77	
2-25-00	40'	40°				
27-10			½ way from Black Tom to end P. R. R. Pet. Term. Breakwater.....	2-00*	.733	
2-30-00	5'	5°	½ way from Liberty to Black Tom..	2-40	.63	
32-00	20'	20°				
2-35-00			¾ way from Black Tom to Liberty...	3-46	.45	Faint southerly breeze.
37-40	40'	20°	½ way from Black Tom to Liberty Is.	2-45*	.53	Light South West breeze.
2-40-00	5'	15°	¾ way from Liberty to Black Tom...	2-18	.72	
43-40						
2-45-00	20'	20°				
47-45						
2-50-00						
52-18						

* Far distance of 88 feet.

August 23, 1900.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100', m. s.	Velocity, feet per second.	Wind.
2-55-00 59-20	40'	30°	At first toward East R. Finally West of Liberty.....	4-20	.38	Swerved westward probably by influence of surface current on cord. Assume current toward Pier A.
3-00-02	5'	30°	do.	3-30*	.42	
3-03-30	20'	10°	Black Tom	2-37	.64	
3-05-00	07-37	45°	Battery	4-30	.37	
3-10-00	40'	45°	Hudson	4-10*	.35	
3-15-00	5'	40°	Red Hook	5-15	.32	Surface current carrying cord to south.
3-19-10	20'	65°	At first toward Pier A. Finally Gowanus	8-00?	.21	Swerved southward by influence of surface current on cord. Assume current toward Fulton St., Brooklyn. Cord remained rather slack.
3-20-00	40'	90°				
3-25-00						
33-00						
3-30-00	5'	140°	Bliss Tower	3-55*	0.37	
33-55						
3-36-30	20'	100°	30th St. Ferry S. side Gowanus Bay.	8-45	.19	
45-15						
3-40-10	40'	135°	Edison Chimney	12-20	.14	
52-30						
3-45-30	5'	135°	Edison Chimney	2-40	.55	
48-10						
3-50-00	20'	135°	Between Edison and Bliss Tower....	3-30	.48	
53-30?						
3-55-00	40'	145°	71st St., Brooklyn.....	5-00	.33	
4-00-00						

* For distance of 88 feet.

Current Observations Near Robbins Reef.

August 23, 1909.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100'.	Velocity, feet per second.	Wind.
4-00-15	5'	150°	75th St., Brooklyn.....	m. s. 2-30*	.58	South S. W. breeze.
02-45						
4-05-00	20'	150°	79th St., Brooklyn.....	2-24	.69	
07-24						
4-10-00	40'	145°	71st St., Brooklyn.....	3-50	.43	Uranine on surface toward 71st, Brooklyn.
13-50						
4-15-00	5'	150°	79th St., Brooklyn.....	1-50*	.80	
16-50						
4-19-10	20'	170°	Fort Hamilton	1-45	.95	
20-55						
4-23-00	40'	150°	79th St.	2-22	.70	
25-22						

* For distance of 88 feet.

H. W. G. L. 9.30 A. M. Depth, 45 feet.		August 24, 1908.			
Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100' m. s.	Velocity, feet per second.
9-36-05	5'	225°	St. George Ferry.....	2-0	.83
9-38-05					Calm.
9-37-20	20'	225°	St. George Public School.....	5-25	.31
42-45	40'	225°	St. George Public School.....	5-20	.31
9-40-50					
46-16	5'	225°	St. George Ferry.....	1-25	1.18
9-45-00					
46-25	20'	225°	St. George School.....	7-55	.21
9-55-00					
10-02-55	40'		Between St. Geo. Ferry and Sch'l...	2-15	.74
9-55-00	5'	230°		12-35	.13
10-00-10					
02-25	20'			11-30	.14
10-00-25					
19-00	40'				
10-13-30					
25-00					
10-13-30	5'	235°	St. George School.....	2-27	.68
15-57	20'			7-45	.21
10-24-15					
32-00					
10-26-03	40'				

Wind.

Ran aground in 38'
water 50' toward
St. George School.

Calm.

Balancing tension of
cord 80' toward
Constable Hook.

Balanced by tension
on cord about 10'
W. of starting point.

Aground on sound-
ing find depth 39½'
only.

Stationary about 80'
toward Robbins
Reef. Balance by
cord tension.
Re-anchored in 45' of
water.

Current Observations Near Robbins Reef.

August 24, 1900.—Continued.

Depth of Water, 48'.		Angle from north.	Direction towards.	Elapsed time for 100'.	Velocity, feet per second.	Wind.
Time.	Depth.					
10-41-05 42-55	40'	45°	Opposite (away from) St. George Ferry	m. s. 1-50	.91	Calm.
10-45-00 43-22	5'	250°	W. New Brighton.....	4-22	.38	
10-50-00 56-40	20'	315°	Opposite (away from) Edison Chim- neys	6-40	.25	
10-56-40	40'					
11-02-00 06-05	5'	315°	Opposite Edison Chimneys.....	4-05	.41	
11-14-30 24-50	20'	5°	Retw. Black Tom and end P. R. R. Breakwater	10-20	.15	Depth of water 67 ft. probably retarded by tension on cord.
11-16-00 18-21	40'	45°	Opposite St. George Ferry House....	2-21	.71	
11-20-10 24-45	5'	315°	Opposite Edison Chimneys.....	4-35	.36	
11-24-00 25-47	40'	30°	Liberty	1-47	.46	
11-30-00 33-28	5'	120°	Opposite 53d St., Brooklyn.....	3-23	.48	
11-30-00 34-53	20'	10°	Black Tom	4-53	.34	
11-36-00 36-54	40'	40°	Hudson	5-4	1.85	

Aground balanced by
current against
cord. Depth of
water 38 ft.

Current Observations Near Robbins Reef.

August 24, 1909.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 f.	Velocity, feet per second.	Wind.
11-40-00	5'	5°	Between Black Tom and end P. R. R.	m. s. 2-14	.75	Faint southerly breeze.
42-14			Breakwater			
11-45-00	20'	40°	Hudson	1-43	.97	
46-43						
11-50-22	40'	40°	Hudson	0-48	2.08	
51-10						

Current Observations Near Robbins Reef.—August 25, 1900.

10	Depth, 53 feet.	Angle from north.	Direction towards.	Elapsed time for 100', m. s.	Velocity, feet per second.	Wind.
	Time.	Depth.				
9-53-00	5'	210°	Stapleton Ferry House.....	3-30	.48	Southwest about 10 miles, Foh tide.
10-02-30	20'	210°	Stapleton Ferry House.....	2-00	.83	
10-04-00	40'	185°	Ft. Wadsworth.....	5-00	.33	
10-08-00	5'	165°	Ft. Hamilton.....	4-30	.37	
10-14-00	20'	210°	Stapleton Ferry House.....	2-00	.83	
10-18-30	40'	30°	Liberty Statue.....	10-00	.17	Started toward Ft Wadsworth, went 20' then turned toward Black Tom at 10:30, passed boat at 10:31.
10-19-00						
10-21-00						
10-27-00						
37-00						
10-33-00	5'	115°	53½ St., Brooklyn.....	8-30	.20	
10-39-00	20'	210°	Stapleton Ferry House.....	4-00	.42	
10-40-00	40'	65°	Red Hook Stores.....	5-00	.33	
10-41-00	5'	10°	Black Tom.....	14-00	.12	Started toward Ft Wadsworth, went 25' and turned back toward boat 11:00 At 11:07 lay along side boat.
10-57-00	20'					
11-01-00	40'	20°	Liberty Statue.....	3-00	.55	
01-00	5'	10°	Black Tom.....	12-00	.13	
11-02-00	50'	30°	Liberty Statue.....	13-00	.18	
11-03-00	40'	20°	Liberty Statue.....	10-00	.05	

Current Observations Near Robbins Reef.

August 25, 1909.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 fms.	Velocity, feet per second.	Wind.
11-21-30	5'	10°	Black Tom	3-40	.55	
24-30						
11-24-30	20'	10°	Black Tom	4-00	.42	
30-30						
11-32-00	40'	30°	Liberty Statue	1-30	1.11	
33-30						
11-35-00	5'	10°	Black Tom	2-30	.67	
39-30						
11-42-00	20'	10°	Black Tom	2-30	.67	
44-30						
11-47-00	40'	30°	Liberty Statue	1-30	1.11	
48-30						
11-52-00	5'	10°	Black Tom	2-30	.67	
54-30						
11-57-00	20'	10°	Black Tom	2-40	.83	
59-00						
12-02-00	40'	30°	Liberty Statue	1-30	1.11	
03-30						
12-07-30	5'	10°	Black Tom	2-40	.83	
09-00						
12-12-00	20'	30°	Liberty Statue	2-40	.83	
14-00						
12-17-00	40'	45°	Pier A.....	45	2.22	
17-45						
12-22-30	5'	10°	Black Tom	2-40	.83	
24-30						
12-27-00	20'	30°	Liberty Statue	1-45	.95	
28-45						
12-30-00	40'	40°	Hudson River	45	2.22	
30-45						

Current Observations Near Robbins Reef.

August 26, 1888.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 f.	Velocity, feet per second.	Wind.	N
1-20-00	3'	40°	Hudson	4-30	0.37		
24-30							
1-27-00	20'	40°	Hudson	2-35	0.65		
29-35							
1-33-00	50'	40°	Hudson	42	2.38		
33-42							
1-38-00	3'	30°	Liberty	4-00	0.41		
42-00							
1-46-00	20'	80°	Erie Basin	1-10	1.42		
47-10							
1-52-00	50'	80°	Hudson	30	3.33		
52-30							
1-57-00	3'	80°	Hudson	3-	0.55		
2-00-00							

September 1, 1900.

H. W. G. L. 8.41 A. M.
L. W. G. L. 3.00 P. M.

Depth, 67 feet.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100'.	Velocity, feet per second.	Wind.
10-56-10	4'	167°		m. s. 1-10	1.43	
57-20						
11-00-05	20'	180°		2-15	.74	
02-20						
11-05-00	40'	178°		2-24	.69	
01-24						
11-10-00	4'	172°		1-15	1.33	
11-15						
11-16-00	20'	190°		1-40	1.60	
17-40						
11-20-00	40'	180°		1-44	.96	
21-44						
11-25-00	4'	178°		1-08	1.47	Moderate west breeze.
20-08						
11-30-00	40'	180°		1-21	1.23	
31-21						
11-30-45	20'	163°		1-17	1.36	
32-02						
11-33-15	4'	185°		1-04	1.56	
36-10						
11-40-00	20'	197°		-55	1.82	
40-55						
11-45-00	40'	145°		1-06	1.47	
46-08						
11-50-00	4'	160°		-48	2.09	
50-48						

Current Observations Near Robbins Reef.

September 1, 1866.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 fms.	Velocity, feet per second.	Wind.
11-26-00	20'	200°		m. s. 00-54	1.85	
00-54						
12-00-00	40'	108°		-42	2.58	
00-45						
12-05-00	4'	203°		-54	1.85	
00-54						
12-10-00	20'	205°		-47	2.13	
00-47						
12-15-00	40'	203°		-48	2.09	
00-38						
12-20-00	4'	208°		-39	2.63	
00-33						
12-25-00	20'	202°		-43	2.52	Moderate N. N. W.
00-43						
12-30-00	40'	203°		-34	2.94	
00-34						
12-35-00	4'	210°		-38	2.63	
00-38						
12-40-00	20'	205°		-33	3.22	
00-31						
12-45-00	40'	203°		-28	3.57	
00-28						
12-50-00	4'	200°		-35	2.86	Faint northerly breeze.
00-33						
12-55-00	20'	215°		-30	2.78	
00-41						

September 1, 1900.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Flashed time for 100 f.	Velocity, feet per second.	Wind.
1-05-10	4'	204°		00-31	3.22	
00-41						
1-10-00	20'			-26	3.85	
00-55						
1-14-30	40'	190°		-34	2.94	
15-04						
1-20-05	4'	203°		-32	3.12	
00-37						
1-25-00	20'	206°		-34	2.94	
00-34						
1-30-00	4'	200°		-30	3.53	Fresh north.
00-30						
1-35-00	20'	207°		-20	3.45	
00-28						
1-44-00	40'	200°		-29	3.45	
00-29						
1-46-00	4'	200°		-27	3.70	
00-27						
1-48-50	20'	225°		-31	3.22	
1-56-25	40'	220°		-28	3.57	
00-53						
2-01-10	20'	212°		-32	3.12	
00-51						
2-05-40	40'	212°		-35	2.86	
00-15						

Current observations near Robbins Reef.

September 1, 1886.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 f.	Velocity, feet per second.	Wind.
3-12-00	4'	158°		m. 8. 00-30	3.53	
00-30						
2-10-10	20'	216°		-36	3.56	
00-30						
2-23-25	40'	207°		-37	3.70	Strong N. W.
00-32				-32	3.12	
2-28-00	4'	200°				
00-32						
2-34-00						
3-12-55	20'	213°		-45	2.22	Anchor dragged to 000 ft. E. of Bell buoy within 5 or 10 min. moved up depth of water 50'.
13-40				-53	1.59	Strong N. W.
3-23-30	40'	215°				
24-13	4'	208°		-47	2.15	
3-31-00				1-07 1/2	1.40	
00-47				-51	1.90	
3-35-50	40'	205°		-42	2.38	
36-40				-56	1.79	
3-44-07	20'	210°		-50	1.79	
00-58						
3-05-15	4'	208°				
00-57						
3-50-10	20'	210°				
51-12						
3-55-25	40'	205°				
50-21						

Current Observations Near Robbins Reef.

September 1, 1900.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100', sec. &c.	Velocity, feet per second.	Wind.
3-59-39	4'	205°		00-46	2.56	
4-00-10						
4-03-45	40'	211°		1-07	1.49	
04-52						
4-08-11	20'	212°		-58	1.72	
10-09						
4-12-05	4'	215°		-47	2.13	
00-52						
4-27-02	20'	203°		1-03	1.59	
28-05						
4-33-52	40'	213°		1-33	1.07	
35-25						

Current Observations Near Robbins Reef.

September 3, 1909.

H. W. G. L., 10.20 A. M.
Depth of Water, 65 feet.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100'. <i>m. s.</i>	Velocity, feet per second.	Wind. fairly westerly breeze.
10-00-00	4'					
10-05-00	20'	30°	Liberty	-37	2.70	
00-37	40'	30°	Liberty	-38	2.63	
10-10-13						
00-38	4'	40°	¼ way Pier A to Jersey City.....	-35	2.86	
10-07-00						
00-35	4'	30°	Liberty	-34	2.94	
10-15-00						
00-34	20'	40°	Hudson	-36	2.78	
10-20-00						
00-36	40'	40°	¾ min. W. of Pier A.....	-39	2.56	
10-25-00						
00-39	4'	30°	Liberty	-42	2.38	
10-30-00	4'					
33-35						
34-17	20'	30°	Liberty	-34	2.94	
10-35-00	40'					
37-15						
00-49	4'	20°	Between Liberty and Black Tom....	-37	2.70	Calm.
10-42-00						
00-37	40'	40°	¾ min. W. of Pier A.....	-51	1.96	
10-48-30						
49-21	20'	20°	Between Liberty and Black Tom....	-46	2.17	
10-50-40						
51-26						

Current Observations Near Robbins Reef.
September 3, 1900.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100'. <i>m. s.</i>	Velocity, feet per second.	Wind.
10-55-00	4'	25°	250° W. of Liberty	00-45	2.22	Calm.
00-45						
11-00-00	20'	40°	Hudson	-46	2.17	
00-46						
11-05-00	40'	30°	Liberty	-53	1.89	
11-05	4'					
00-58						
11-14-00	20'	40°	¼ dist. Pier A, across Hudson.....	-56	1.78	
00-56						
11-16-15	40'	40°	Hudson	1-02	1.61	
17-17						
11-20-00	4'	35°	¼ way Liberty to Pier "A"	1-18	1.28	
21-18						
11-25-00	20'	30°	Liberty	-58	1.72	
00-58						
11-30-00	40'	40°	Hudson	1-10	1.43	
31-10						
11-35-00	4'	40°	Hudson	1-15	1.33	
36-15						
11-40-00	20'	40°	Hudson	1-21	1.23	Gentle S. E. breeze.
41-21						
11-46-15	40'	45°	Pier A.....	1-33	1.07	
49-05	40'					
56-38						
11-52-00	4'	30°	Liberty	1-29	1.12	
53-29						

Current Observations Near Robbins Reef.

September 3, 1909.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100'. <i>m. s.</i>	Velocity, feet per second.	Wind.
11-55-00	20'	55°	Opposite St. George School,	1-49	.92	
59-00	20'					
12-00-49	40'	55°	do.	3-25	.49	S. E. breeze.
12-05-00	40'					
08-25	4'	105°	300' S. of B. R. T. Chimney	3-03	.54	
12-11-00						
14-03	20'	100°	38th St., Brooklyn	5-02	.33	
12-16-00	20'					
21-02	40'	40°	Hudson River	2-35	.64	
12-24-00						
26-35	4'	120°	300' N. of Edison Chimney	2-38	.63	
12-29-00	4'					
30-30	4'					
33-08						
12-35-30	20'	85°	Erle Basin	2-25	.69	
37-55						
12-40-00	40'	200°	Spire at Clifton	2-44	.61	
43-00	40'					
45-44						
12-45-00	4'	200°	do.	1-13	1.37	
46-13						
12-50-00	20'	210°	Stapleton	1-52	.89	Faint S. E. breeze.
51-52	40'	210°	do.	1-41	.96	
12-55-00						
56-41						

Current Observations Near Robbins Reef.

September 3, 1909.—Continued.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100'. <i>m. s.</i>	Velocity, feet per second.	Wind.
1-02-00	4'	210°	Stapleton	1-11	1.41	
03-11						
1-05-00	20'	205°	Between Stapleton and Clifton.....	1-14	1.35	
06-14						
1-10-00	40'	205°	Between Stapleton and Clifton.....	1-46	.99	
11-46						
1-15-00	4'	200°	Clifton Spire	1-00	1.67	Faint southwesterly breeze.
16-00						
1-20-00	20'	210°	Stapleton	1-04	1.56	
21-04						
1-25-00	40'	210°	Stapleton	1-07	1.49	
33-00						
34-07						

Current Observations Near Robbins Reef.

October 11, 1900.

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100 fms.	Velocity, feet per second.	Wind.	
						Clear — wind strong.	East —
1-54-20	4'	250°		1-06	1.50		
55-26							
2-11-3	20'	255°		2-07	0.79		
13-10							
2-24-00	40'	260°					
31-00							
55-00		263°			0.65		
2-58-14	4'	270°	85' out	2-04	0.81		
3-00-18							
3-11-55	20'	320°		4-25	0.38		
16-20							
3-27-48	40'	360°	85' out	6-46	0.21		
34-34							
3-49-20	20'	5°		2-00	0.83		
51-20							
4-08-00	4'	20°		1-23	1.20		
4-20-00	4'						
21-23							

Current Observations Near Robbins Reef.

October 22, 1900.

THE STATE OF NEW JERSEY ET AL.

3443D

Time.	Depth.	Angle from north.	Direction towards.	Elapsed time for 100'. s.	Velocity, feet per second.	Wind. South-light—Overcast.
9-55-00	4'	275°	R. R. Light House.....	380	.26	
10-01-20	20'	340°	P. R. R. Term.....	400	.25	
10-05-00	40'	30°	South of Liberty.....	100	1.00	
10-15-00	16-40					
10-25-00	4'	340°	P. R. R. Term.....	380	.26	
10-31-20	20'	15°	Black Tom Island.....	200	.50	
10-35-00	40'	30°	South of Liberty.....	100	1.00	
10-40-00	4'	15°	Black Tom Island.....	190	.53	
10-50-00	20'	35°	Up Hudson River.....	105	.95	
11-00-00	40'	45°	Pier A.....	70	1.43	
11-01-15						
11-10-00						
11-20-00						

24

Current Observations Near Robbins Reef.

December 7, 1900. H. W. G. L., 4:35 P. M.

Overcast. Sounding 9:30 A. M. = 60'.

Time.	Depth.	Direction or angle from north.	Elapsed time for 100'.	Velocity, feet per second.	Wind.
			<i>s.</i>		
9-45-00	2'	215°	55	1.81	East-light.
45-55					
10-00-40	20'	215°	40	2.50	
01-20					
10-12-54	40'	209°	43	2.32	
13-37					
10-19-00	2'	212°	45	2.22	
19-45					
10-27-00	20'	208°	44	2.27	
27-44					
10-35-00	40'	200°	45	2.22	
35-45					
10-45-00	2'	211°	43	2.32	
45-43					
10-52-00	20'	210°	50	2.00	
52-50					
11-00-00	40'	210°	52	1.92	
00-52					
11-10-00	2'	215°	58	1.72	
10-58					
11-15-00	20'	220°	70	1.42	
16-10					
11-20-00	40'	220°	78	1.28	
21-18					
11-30-00	2'	214°	64	1.56	
31-04					

Current Observations Near Robbins Reef.

December 8, 1900. H. W. G. I., 5:00 A. M.

Time.	Depth.	Direction or angle from north.	Elapsed time for 100.	Velocity, feet per second.	Wind.
			s.		
0-00-00	2'	200°	54	1.85	Strong S. W.—Clear.
00-54					
0-08-00	20'	192°	45	2.22	
08-45					
10-11-00	40'	190°	47	2.12	
11-47					
10-18-00	2'	205°	60	1.67	
18-00					
10-26-00	20'	200°	67	1.49	
26-07					
10-30-00	40'	190°	88	1.14	
31-28					

26

Current Observations Near Robbins Reef.

December 10, 1900. H. W. G. L., 6:05 A. M.

Time.	Depth.	Direction or angle from north.	Elapsed time for 100'.	Velocity, feet per second.	Wind.
			8.		
1-30-00	2'	200°	47	2.12	Strong N. W.—Fair.
30-47					
1-47-00	40'	190°	44	2.27	
47-44					
2-01-00	2'	196°	45	2.22	
01-45					
2-10-00	20'	195°	47	2.13	
10-47					
2-20-00	40'	198°	52	1.92	
20-52					
2-29-00	2'	200°	60	1.07	Boat swings.
29-00					
2-40-00	20'	215°	75	1.33	
40-15					
2-50-00	40'	220°	115	0.87	
51-55					
3-01-00	2'	230°	120	0.83	
03-00					
3-11-00	20'	228°	140	0.71	
13-20					
3-20-00	40'	260°	200	0.50	
23-20					
3-30-00	2'	230°	165	.61	
32-45					
3-40-00	20'	260°	250	.40	
44-10					
3-51-00	40'	352°	300	.28	
57-00					
4-00-00	2'	205°	300	.20	
05-00	60'		500		
4-12-00	20'	45°	180	.28	
15-00	50'		300		

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

vs.

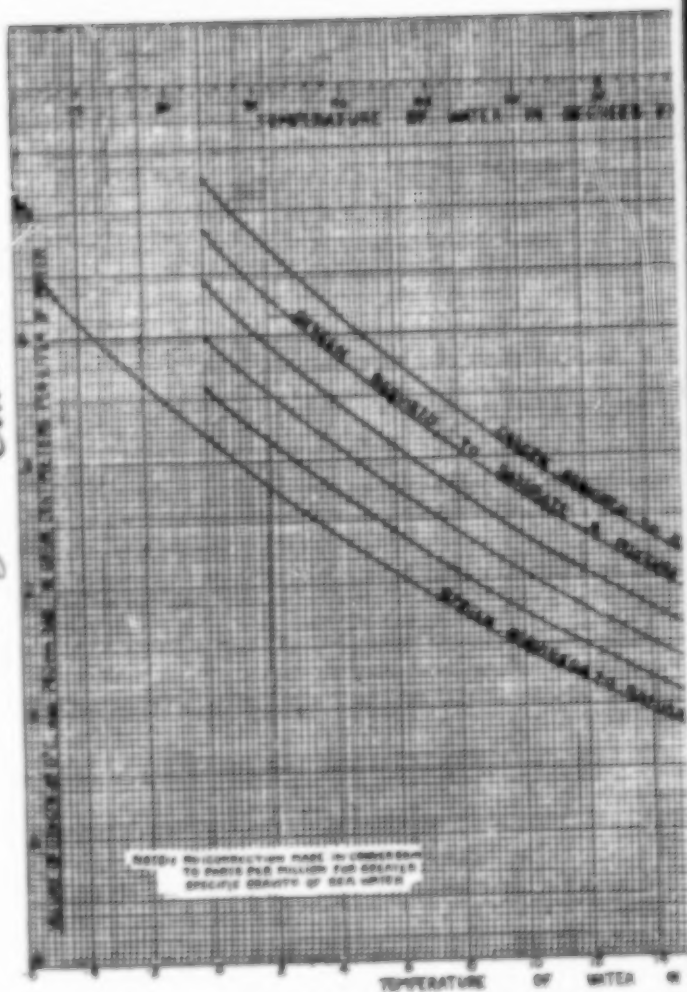
STATE OF NEW JERSEY ET AL.

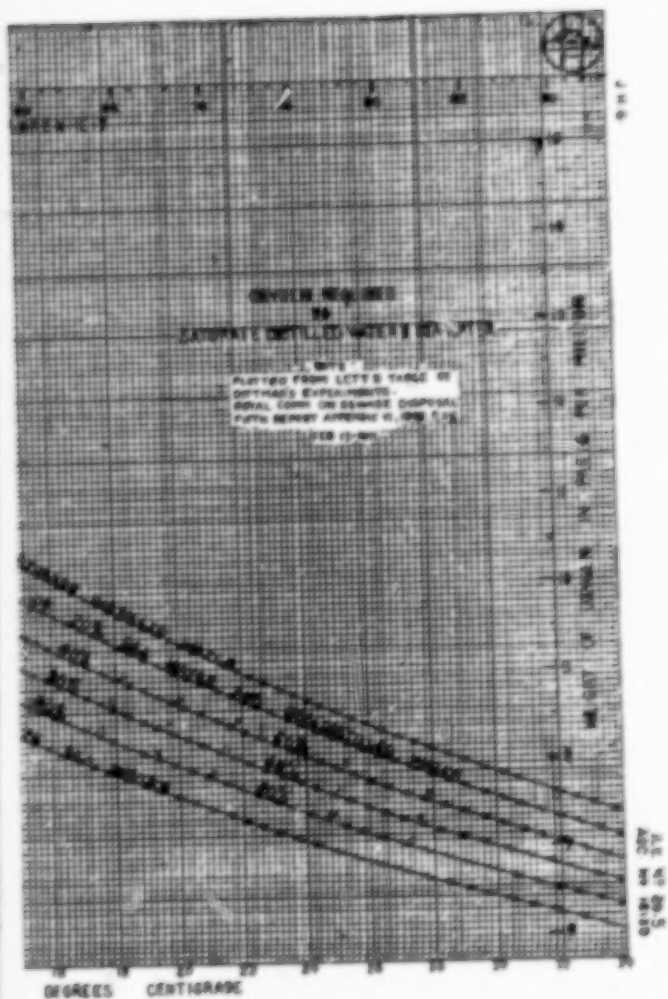
COMPLAINANTS' EXHIBIT No. 93.

JAMES D. MAHER,
Commissioner.



*Compliments Exh. A. No. 93.
James D. Maher
Commissioner*





THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 94.

JAMES D. MAHER,
Commissioner.



Dissolved Oxygen. Buttermilk Channel, East river. June 27, 1911.
 High water at Governors Island at 8.23 a.m. Low water at 2.57 p.m.

Sample No.	Hour a.m.	Location of Samples	Approximate	Feet		Tidal current	Temp.	Per cent	Oxygen
				Exact	below surface	rent	Des. C	per saturation	
1	11.00	Slip just east of pier 32, East river, Brooklyn		Lat 40 41 15 Long 74 00 28	1	Ebb	20.5	36	1.56 27
2	11.02	Slip just east of pier 32, East river, Brooklyn		Lat 40 41 15 Long 74 00 26	10	Ebb	20.5	36	1.56 27
3	11.20	Buttermilk Channel, 200 feet off pier 29, Brooklyn		Lat 40 41 22 Long 74 00 26	1	Ebb	20	34	3.11 54
4	11.23	Buttermilk Channel, 200 feet off pier 29, Brooklyn		Lat 40 41 22 Long 74 00 26	20	Ebb	20	34	3.11 54
5	11.30	Buttermilk Channel, 200 feet off pier 29, Brooklyn		Lat 40 41 22 Long 74 00 26	35	Ebb	20	34	3.11 43
6	12.00	Buttermilk Channel, 200 feet off outer end of De Graaf St. Slip		Lat 40 41 15 Long 74 00 32	1	Ebb	20	34	2.49 42
7	12.02	Buttermilk Channel, 200 feet off outer end of De Graaf St. Slip		Lat 40 41 15 Long 74 00 32	20	Ebb	20	34	2.49 43
8	12.05	Buttermilk Channel, 200 feet off outer end of De Graaf St. Slip		Lat 40 41 15 Long 74 00 32	35	Ebb	20	34	2.49 45
9	12.20	Buttermilk Channel, 200 feet off east end of pier 33, Brooklyn		Lat 40 41 11 Long 74 00 25	1	Zebb	20	34	2.49 45
10	12.32	Buttermilk Channel, 200 feet off east end of pier 33, Brooklyn		Lat 40 41 11 Long 74 00 35	20	Ebb	20	34	2.49 43
11	12.35	Buttermilk Channel, 200 feet off east end of pier 33, Brooklyn		Lat 40 41 11 Long 74 00 35	30	Ebb	20	34	2.49 42

EX. 94. p.1

Amendments Exhibit No. 94
James H. Thompson
Prothonotary



Dissolved Oxygen. Gowanus Canal. June 27, 1911.
 High water at Governors Island at 8.33 a.m. Low water at 2.57 p.m.

Sample No.	Hour P.M.	Location of Samples		Exact 0 1'	Feet below surface	Tidal cur- rent	Temp. Deg.	Per- cent satura- tion	Oxygen per litre
		Approximate							
12	1.20	Gowanus Canal at its mouth. foot of 25 St., Brooklyn	Lat 40 39 55 Long 74 00 25	1	Flood	20.5	34	2.18	38
13	1.23	Gowanus Canal at its mouth. foot of 25 St., Brooklyn	Lat 40 39 55 Long 74 00 25	10	Flood	20.5	34	2.18	38
14	1.45	Gowanus Canal at Hamilton Ave. bridge	Lat 40 40 17 Long 73 59 56	1	Flood	20.5	34	0.47	8
15	1.48	Gowanus Canal at Hamilton Ave. bridge	Lat 40 40 17 Long 73 59 56	10	Flood	20.5	34	0.47	8
16	2.00	Gowanus Canal at 9th St. bridge	Lat 40 40 25 Long 73 59 50	1	Flood	20.5	34	0	0
17	2.03	Gowanus Canal at 9th St. bridge	Lat 40 40 25 Long 73 59 50	10	Flood	20.5	34	0	0
18	2.30	Gowanus Canal at Hamilton Ave. bridge	Lat 40 40 17 Long 73 59 56	1	Flood	20.5	34	0.94	16
19	2.36	Gowanus Canal at Hamilton Ave. bridge	Lat 40 40 17 Long 73 59 56	10	Flood	20.5	34	1.24	21

Ex. 94. p.2

Hudson river. June 28, 1911.

Dissolved Oxygen.

High water at Governors Island at 9.03.

Sample No.	Hour p.m.	Location of Samples		Tidal current	Temp. Deg.C	Per- cent water	Oxygen per saturation
		Approximate	Exact				
			Feet below surface				
20	5.10	Hudson river, 500 feet off Inwood.	Lat 40 32 15 Long 73 56 00	1	Ebb	22	76 3.45 57
21	5.15	Hudson river, 500 feet off Inwood.	Lat 40 32 15 Long 73 56 00	1	Ebb	22	76 3.96 66
22	5.20	Hudson river, 500 feet off Inwood.	Lat 40 32 15 Long 73 56 00	30	Ebb	22	68 3.74 62

EX. 94, p.3

Dissolved Oxygen. Hudson River Cross-section at St. Vincent. June 29, 1911.
High water at Governors Island at 10.28 a.m. Low water at 4.47 p.m.

Sample No.	Hour a.m.	Location of Samples		Bath- o- m-	Feet below surface	Tidal Temp. at water level	Per- cent saturation	Oxygen litres per litre of water
		Approximate						
23	9.40	300 feet off St. Vincent dock	Lat 40 54 50 Long 73 54 46	1	Flood 72	84	4.08	88
24	9.42	300 feet off St. Vincent dock	Lat 40 54 50 Long 73 54 46	20	Flood 72	80	3.76	82
25	9.45	300 feet off St. Vincent dock	Lat 40 54 50 Long 73 54 46	20	Flood 72	76	3.74	82
26	10.10	1/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	1	Flood 72	80	4.08	88
27	10.12	1/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	20	Flood 72	72	3.74	82
28	10.15	1/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	40	Flood 72	72	3.74	82
29	10.40	Midstream	Lat 40 54 50 Long 73 54 46	1	Flood 82	80	4.08	88
30	10.42	Midstream	Lat 40 54 50 Long 73 54 46	20	Flood 82	72	4.08	88
31	10.45	Midstream	Lat 40 54 50 Long 73 54 46	20	Flood 82	72	4.08	88
32	11.00	2/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	1	Flood 82	80	4.08	88
33	11.02	2/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	10	Flood 82	76	4.08	88
34	11.05	3/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	20	Flood 82	72	4.08	88
35	11.55	300 feet off New Jersey shore	Lat 40 54 50 Long 73 54 46	1	Flood 82	80	4.08	88
36	11.57	300 feet off New Jersey shore	Lat 40 54 50 Long 73 54 46	10	Flood 82	76	4.08	88
37	12.00	300 feet off New Jersey shore	Lat 40 54 50 Long 73 54 46	15	Flood 82	76	4.08	88

Dissolved Oxygen. Hudson River-cross section at Mt. St. Vincent June 29, 1913 (Continued.)

Sample No.	Hour P. M.	Location of Samples		Knots 0	Foot below surface	Tidal current	Temp. for water cent Deg.	Percent Oxygen litre tation
38	3.20	300' off Mt. St. Vincent dock	Lat 40 54 50 Long 73 54 46	1	Ebb	23	50	4.05
39	3.23	300' off Mt. St. Vincent dock	Lat 40 54 50 Long 73 54 46	20	Ebb	23	78	4.05
40	3.25	300' off Mt. St. Vincent dock	Lat 40 54 50 Long 73 54 46	30	Ebb	23	72	3.74
41	3.32	1/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	1	Ebb	23	80	4.03
42	3.35	1/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	20	Ebb	23	76	4.05
43	3.35	1/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	40	Ebb	23	72	3.74
44	4.10	Midstream	Lat 40 54 50 Long 73 54 46	1	Ebb	23	80	4.25
45	4.12	Midstream	Lat 40 54 50 Long 73 54 46	20	Ebb	23	76	4.22
46	4.16	Midstream	Lat 40 54 50 Long 73 54 46	30	Ebb	23	72	4.25
47	4.30	3/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	1	Ebb	23	84	4.60
48	4.32	3/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	10	Ebb	23	80	4.23
49	4.35	3/4 way across from New York shore	Lat 40 54 50 Long 73 54 46	20	Ebb	23	76	4.05
50	4.50	300' off New Jersey shore	Lat 40 54 50 Long 73 54 46	1	Ebb	23	84	4.60
51	4.52	300' off New Jersey shore	Lat 40 54 50 Long 73 54 46	10	Ebb	23	80	4.23
52	4.55	300' off New Jersey shore	Lat 40 54 50 Long 73 54 46	15	Ebb	23	76	4.23

Dissolved Oxygen.

East River Cross-section from College Point to
Gleason Point.

High water at Governors Island at 11.25 a.m. Low water at 5.27 p.m. High water at Hell Gate
at 1.20 p.m. Low water at 7.16 p.m.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. Per- cent		Oxygen U.C. Percent per satura- tion
		Approximate	Exact		cur- rent	log.C water	
53	11.00	200 feet off Gleason Point dock	Lat 40 48 16 Long 73 51 11	1	Flood	20 28	3.43 60
54	11.02	200 feet off Gleason Point dock	Lat 40 48 16 Long 73 51 11	20	Flood	20 28	3.27 57
55	11.04	200 feet off Gleason Point dock	Lat 40 48 16 Long 73 51 11	40	Flood	20 26	3.11 55
56	11.25	1/4 way across from Gleason Pt.	Lat 40 49 09 Long 73 51 11	1	Flood	20 28	3.43 60
57	11.27	1/4 way across from Gleason Pt.	Lat 40 49 09 Long 73 51 11	26	Flood	20 28	3.27 57
58	11.30	1/4 way across from Gleason Pt.	Lat 40 49 09 Long 73 51 11	40	Flood	20 26	3.11 55
59	11.46	Midstream	Lat 40 48 00 Long 73 51 11	1	Flood	20 26	3.11 55
60	11.48	Midstream	Lat 40 48 09 Long 73 51 11	20	Flood	20 26	3.11 55
61	11.50	Midstream	Lat 40 48 00 Long 73 51 11	40	Flood	20 26	3.11 55
62	12.06	3/4 way across from Gleason Pt.	Lat 40 47 51 Long 73 51 11	1	Flood	20 18	3.11 55
63	12.08	3/4 way across from Gleason Pt.	Lat 40 47 51 Long 73 51 11	20	Flood	20 26	3.11 55
64	12.10	3/4 way across from Gleason Pt.	Lat 40 47 51 Long 73 51 11	40	Flood	20 26	3.11 55
65	12.26	300 feet off College Point	Lat 40 47 44 Long 73 51 11	1	Flood	20 28	3.11 55
66	12.28	300 feet off College Point	Lat 40 47 44 Long 73 51 11	20	Flood	20 26	3.27 57
67	12.30	300 feet off College Point	Lat 40 47 44 Long 73 51 11	36	Flood	20 26	3.27 57

Dissolved Oxygen.

East River Cross-section from Old Ferry Point to
Whitestone Point.

June 30, 1911.

High water at Governors Island at 11.33 a.m. Low water at 5.27 p.m. High water at Hell

Date at 1.20 p.m. Low water at 7.15 p.m.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal Temp. Per- cent Deg. C	Oxygen per cent saturation
		Approximate	Exact			
68	1.00	500 feet off Old Ferry Point	Lat 40 40 16 Long 73 49 49	1	Flood 21	24 4.69 85
69	1.02	500 feet off Old Ferry Point	Lat 40 48 16 Long 73 49 49	20	Flood 21	24 4.69 85
70	1.04	500 feet off Old Ferry Point	Lat 40 46 16 Long 73 49 49	30	Flood 21	24 5.00 91
71	1.16	Midstream	Lat 40 49 10 Long 73 49 58	1	Flood 21	24 4.66 85
72	1.18	Midstream	Lat 40 46 10 Long 73 49 58	10	Flood 21	24 4.68 85
73	1.20	Midstream	Lat 40 48 10 Long 73 49 58	20	Flood 21	24 5.00 91
74	1.26	500 feet off Whitestone Pt.	Lat 40 48 04 Long 73 49 18	1	Flood 21	24 4.68 85
75	1.38	500 feet off Whitestone Pt.	Lat 40 48 04 Long 73 49 18	30	Flood 21	24 5.00 91
76	1.40	500 feet off Whitestone Pt.	Lat 40 48 04 Long 73 49 18	50	Flood 21	24 5.00 91

Ex. 94, p. 7

3355433

44543

Dissolved Oxygen.

East River Cross-section from College Point
to Green Point.
June 30, 1911.

PEOPLE OF STATE OF NEW YORK VS. STATE OF NEW JERSEY. 3454

Sample No.	Hour p.m.	Location of Samples	Approximate	Exact 0'	Feet below Surface	Tidal cur- rent	Temp. Deg.C	Per- cent water	Oxygen	
									U.C. per land	Percent satura- tion
77	2.20	200 feet off Glason Pt. dock	Lat 40 48 15 Long 73 51 11	Lat 40 48 15 Long 73 51 11	1	Ebb	21	26	4.33	79
78	2.22	200 feet off Glason Pt. dock	Lat 40 48 15 Long 73 51 11	Lat 40 48 15 Long 73 51 11	20	Ebb	21	24	4.33	79
79	2.24	200 feet off Glason Pt. dock	Lat 40 48 15 Long 73 51 11	Lat 40 48 15 Long 73 51 11	40	Ebb	21	24	4.06	74
80	2.39	1/4 way across from Glason Pt.	Lat 40 48 09 Long 73 51 11	Lat 40 48 09 Long 73 51 11	1	Ebb	21	26	4.33	79
81	2.41	1/4 way across from Glason Pt.	Lat 40 48 09 Long 73 51 11	Lat 40 48 09 Long 73 51 11	20	Ebb	21	24	4.33	79
82	2.43	1/4 way across from Glason Pt.	Lat 40 48 09 Long 73 51 11	Lat 40 48 09 Long 73 51 11	40	Ebb	21	24	4.06	74
83	2.57	Midstream	Lat 40 48 00 Long 73 51 11	Lat 40 48 00 Long 73 51 11	1	Ebb	21	26	4.33	79
84	2.59	Midstream	Lat 40 48 00 Long 73 51 11	Lat 40 48 00 Long 73 51 11	20	Ebb	21	24	4.33	79
85	3.01	Midstream	Lat 40 48 00 Long 73 51 11	Lat 40 48 00 Long 73 51 11	40	Ebb	21	24	4.75	74
86	3.16	3/4 way across from Glason Pt.	Lat 40 47 51 Long 73 51 11	Lat 40 47 51 Long 73 51 11	1	Ebb	21	20	4.33	79
87	3.16	3/4 way across from Glason Pt.	Lat 40 47 51 Long 73 51 11	Lat 40 47 51 Long 73 51 11	20	Ebb	21	24	4.33	79
88	3.20	3/4 way across from Glason Pt.	Lat 40 47 51 Long 73 51 11	Lat 40 47 51 Long 73 51 11	40	Ebb	21	24	4.06	74
89	3.26	300 feet off College Point	Lat 40 47 44 Long 73 51 11	Lat 40 47 44 Long 73 51 11	1	Ebb	21	26	4.33	79
90	3.37	300 feet off College Point	Lat 40 47 44 Long 73 51 11	Lat 40 47 44 Long 73 51 11	20	Ebb	21	24	4.33	79
91	3.40	300 feet off College Point	Lat 40 47 44 Long 73 51 11	Lat 40 47 44 Long 73 51 11	36	Ebb	21	24	4.06	74

Ex. 94. p.8

Dissolved Oxygen.

East River from Battery to Lawrence Point.

July 5, 1911.

High water at Governors Island at 4 P.M. Low water at 9.47 A.M. High water at

Hell Gate at 5.50 P.M. Low water at 11.23 A.M.

Sample No.	Hour A.M.	Location of Samples		Exact " O "	Feet below surface	Tidal range our- rent	Temp. water Deg.C	Per- cent water	Oxygen	
		Approximate							C.C.	Percent saturation
92	9.50	Midway between Governors Island and Battery	Lat 40 41 50 Long 74 00 56		1	Ebb	23	38	3.11	55
93	9.51	Midway between Governors Island and Battery	Lat 40 41 50 Long 74 00 56		20	Ebb	23	38	3.11	55
94	9.53	Midway between Governors Island and Battery	Lat 40 41 50 Long 74 00 56		30	Ebb	23	38	3.11	55
95	10.13	At Brooklyn bridge, midstream	Lat 40 42 20 Long 73 59 48		1	Ebb	23	38	3.96	53
96	10.14	At Brooklyn bridge, midstream	Lat 40 42 20 Long 73 59 48		20	Ebb	23	38	3.11	55
97	10.16	At Brooklyn bridge, midstream	Lat 40 42 20 Long 73 59 48		40	Ebb	23	38	3.11	55
98	10.36	At Williamsburg bridge, midstream	Lat 40 42 49 Long 73 58 21		1	Ebb	23	38	2.96	53
99	10.37	At Williamsburg bridge, midstream	Lat 40 42 49 Long 73 58 21		20	Ebb	23	38	3.11	55
100	10.40	At Williamsburg bridge, midstream	Lat 40 42 49 Long 73 58 21		40	Ebb	23	36	3.11	55
101	11.00	At Queensboro bridge, middle of E. Channel	Lat 40 45 21 Long 73 57 02		1	Ebb	22	36	3.11	55
102	11.01	At Queensboro bridge, middle of E. Channel	Lat 40 45 21 Long 73 57 02		20	Ebb	23	36	3.11	55
103	11.03	At Queensboro bridge, middle of E. Channel	Lat 40 45 21 Long 73 57 02		36	Ebb	23	36	3.11	55
104	11.20	Hell Gate, midway between Hell Gate Pt. and Mill Rock	Lat 40 46 44 Long 73 56 16		1	Ebb	23	32	3.11	57

Ex. 94, p. 9

Dissolved Oxygen.

East River from Battery to Lawrence Point.

(Continued.) July 6, 1911.

Sample No.	Hour a.m.	Location of Sample		Depth fathoms	East below surface	Tidal current	Temp. water	Percent dissolved	Oxygen per saturation
		Approximate				rent	DeG.C		
106	11.21	Hell Gate, Midway between Hallett's Pt. and Mill Rock	Lat 40 46 44 Long 73 56 15	50	Ebb	23	32	8.11	67
106	11.28	Hell Gate, Midway between Hallett's Pt. and Mill Rock	Lat 40 46 44 Long 73 56 15	60	Ebb	23	32	8.11	67
107	11.40	Midway between Lawrence Point and Stony Point	Lat 40 47 25 Long 73 54 40	1	Ebb	21	29	7.74	68
108	11.41	Midway between Lawrence Point and Stony Point	Lat 40 47 25 Long 73 54 40	80	Ebb	23	29	4.03	74
109	11.45	Midway between Lawrence Point and Stony Point	Lat 40 47 25 Long 73 54 40	50	Ebb	27	29	4.33	78

Ex. 94, p.10

East River-Battery to Lawrence Point July 8, 1911

Dissolved Oxygen

Sample No.	Hour P.m.	Location of Samples		Exact c	Feet below surface	Tidal current	Temp. Per water cent Deg.-C.	Per cent saturation waterlitre tion
		Approximate						
110	3.00	Midway between Governors Is. (N. dock) and Battery Park (Barge office)	Lat 40 41 50 Long 74 00 55		1	Flood	23 40	3.74 67
111	3.01	Midway between Governors Is. (N. dock) and Battery Park (Barge office)	Lat 40 41 50 Long 74 00 56		20	Flood	23 36	3.74 67
112	3.03	Midway between Governors Is. (N. dock) and Battery Park (Barge office)	Lat 40 41 50 Long 74 00 56		20	Flood	23 29	3.74 67
113	3.23	At Brooklyn Bridge-midstream (Barge office)	Lat 40 42 50 Long 73 59 48		1	Flood	23 26	3.43 61
114	3.24	At Brooklyn Bridge-midstream	Lat 40 42 50 Long 73 59 48		20	Flood	23 26	3.43 61
115	3.26	At Brooklyn Bridge-midstream	Lat 40 42 50 Long 73 59 48		40	Flood	23 32	3.43 59
116	3.45	At Williamsburg Bridge-midstream	Lat 40 42 49 Long 73 58 21		1	Flood	23 36	3.11 56
117	3.45	At Williamsburg Bridge-midstream	Lat 40 42 49 Long 73 58 21		20	Flood	23 36	3.11 55
118	3.46	At Williamsburg Bridge-midstream	Lat 40 42 49 Long 73 58 21		40	Flood	23 36	3.11 59
119	4.15	At Queensboro Bridge-midstream	Lat 40 45 31 Long 73 57 04		1	Flood	23 40	3.11 68
120	4.19	At Queensboro Bridge-midstream	Lat 40 45 31 Long 73 57 04		20	Flood	23 36	3.11 59
121	4.21	At Queensboro Bridge-midstream	Lat 40 45 31 Long 73 57 04		35	Flood	23 30	3.11 59

MS. 94, p. 11

July 5, 1911

East River

Dissolved Oxygen

High water occurred at Hell Gate at 5.50 p.m.

Sample No.	Hour p.m.	Location of Samples		Exact O. V.	Feet below surface	Tidal current per day, C	Temp. per land water	Per cent water	Oxygen per litre	Percent natural
		Approximate								
122	4.40	Hell Gate midway between Hallett's Point and Mill Rock		Lat 40 46 44 Long 73 56 16	1	Flood 23	60	5.11	86	
123	4.41	Hell Gate midway between Hallett's Point and Mill Rock		Lat 40 46 44 Long 73 56 16	20	Flood 23	50	5.12	86	
124	4.43	Hell Gate midway between Hallett's Point and Mill Rock		Lat 40 46 44 Long 73 56 16	60	Flood 23	86	5.13	86	
125	5.03	Midway between Stony Point and Lawrence Point		Lat 40 47 36 Long 73 54 40	1	Flood 23	86	5.13	86	
126	5.04	Midway between Stony Point and Lawrence Point		Lat 40 47 36 Long 73 54 40	20	Flood 23	86	5.13	86	
127	5.06	Midway between Stony Point and Lawrence Point		Lat 40 47 36 Long 73 54 40	60	Flood 23	36	5.13	86	

Ex. 94, p. 12

Dissolved Oxygen Governor Canal July 6, 1911
 High water occurred at Governors Island at 4.55 p.m. Low water at 10.27 a.m.

Sample No.	Hour P.M.	Location of Sample	Approximate	Depth fathoms	Temp. of water	Percent oxygen	W.C. per litre	Direction
128	2.50	Governor bay near anchorage buoy	Lat 40 39 48 Long 74 01 50	1	Flood 58.8	56	4.08	78
129	2.51	Governor bay near anchorage buoy	Lat 40 39 48 Long 74 01 50	1	Flood 58.8	56	4.08	78
130	2.52	Governor bay near anchorage buoy	Lat 40 39 48 Long 74 01 50	1	Flood 58.8	56	4.08	78
131	3.00	Governor canal at mouth-foot of 25th St.	Lat 40 39 58 Long 74 00 28	1	Flood 54	56	3.11	87
132	3.04	Governor canal at mouth-foot of 25th St.	Lat 40 39 58 Long 74 00 28	1	Flood 54	56	3.11	87
133	3.22	At Hamilton Ave. Bridge	Lat 40 40 17 Long 73 59 56	1	Flood 54.8	56	3.38	42
134	3.28	At Hamilton Ave. Bridge	Lat 40 40 17 Long 73 59 56	1	Flood 54.8	56	3.31	88
135	4.00	At 9th St. Bridge	Lat 40 40 58 Long 73 59 50	1	Flood 54.8	56	3.56	89
36	4.02	At 9th St. Bridge	Lat 40 40 58 Long 73 59 50	1	Flood 54.8	56	3.16	40

SR. 94, p. 12

Dissolved Oxygen
 Hudson River-Battery to Yonkers July 7th, 1911.
 High water occurred at Governors Island at 5.25 P.M. Low water at 11.27 A.M.

Sample No.	Hour A.M.	Location of Samples	Approximate	Exact	Feet below surface	Tidal range	Temp. Deg. C.	Percent water	Percent oxygen
137	9.00	Midway between Pier A and C.R.R. Lat of N.J. ferry, Jersey City	Lat 40 42 19 Long 74 01 24	1	Ebb	24.5	46	3.43	63
138	9.01	Midway between Pier A and C.R.R. Lat of N.J. ferry, Jersey City	Lat 40 42 19 Long 74 01 24	20	Ebb	24	42	3.43	63
139	9.03	Midway between Pier A and C.R.R. Lat of N.J. ferry, Jersey City	Lat 40 42 19 Long 74 01 24	40	Ebb	24	34	3.43	63
140	9.20	Off Canal St. Midstream	Lat 40 43 36 Long 74 01 34	1	Ebb	24.5	54	3.43	63
141	9.21	Off Canal St. Midstream	Lat 40 43 36 Long 74 01 17	20	Ebb	24	48	3.43	62
142	9.23	Off Canal St. Midstream	Lat 40 43 38 Long 74 01 17	40	Ebb	24	40	3.43	62
143	9.40	Off 23d St. Midstream	Lat 40 45 09 Long 74 01 17	1	Ebb	25	60	3.27	58
144	9.41	Off 23d St. Midstream	Lat 40 45 09 Long 74 01 00	20	Ebb	24.5	52	3.11	55
145	9.43	Off 23d St. Midstream	Lat 40 45 09 Long 74 01 00	40	Ebb	24	44	3.11	57
146	10.00	Off W. 42d St. Midstream	Lat 40 45 50 Long 74 00 36	1	Ebb	25	66	3.11	54
147	10.01	Off W. 42d St. Midstream	Lat 40 45 50 Long 74 00 36	20	Ebb	24.5	52	3.43	62
148	10.03	Off W. 42d St. Midstream	Lat 40 45 50 Long 74 00 36	40	Ebb	24	44	3.74	69
149	10.23	Off W. 72d St. Midstream	Lat 40 47 02 Long 73 59 42	1	Ebb	25	70	4.05	70
150	10.24	Off W. 72d St. Midstream	Lat 40 47 02 Long 73 59 42	20	Ebb	24.5	56	4.05	73
151	10.26	Off W. 72d St. Midstream	Lat 40 47 02 Long 73 59 42	40	Ebb	24	52	4.05	75

Ex. 94. p.14

July 7, 1911.

Hudson River

Dissolved Oxygen

(Continued)

Sample No.	Hour a.m.	Location of Sample	Approximate	Exact	Feet below surface	Tidal Temp. cur- rent	Per- cent Deg. C	Per- cent Deg. F	Oxygen per satu- ration
152	10.45	Off W. 110th St.	Midstream	Lat 40 48 32 Long 73 58 40	1	Ebb	25	78	5.27 91
153	10.47	Off W. 110th St.	Midstream	Lat 40 48 32 Long 73 58 40	20	Ebb	24.5	60	4.05 72
154	10.49	Off W. 110th St.	Midstream	Lat 40 48 32 Long 73 58 40	40	Ebb	24	52	4.05 73
155	11.11	Off W. 129th St.	Midstream	Lat 40 49 16 Long 73 58 10	1	Ebb	25	54	5.27 91
156	11.12	Off W. 129th St.	Midstream	Lat 40 49 16 Long 73 58 10	20	Ebb	24.5	68	4.05 72
157	11.14	Off W. 129th St.	Midstream	Lat 40 49 16 Long 73 58 10	35	Ebb	24.5	62	4.05 72
158	11.34	Off W. 137th St.	Midstream	Lat 40 50 21 Long 73 57 29	1	Ebb	25	84	5.27 91
159	11.35	Off W. 137th St.	Midstream	Lat 40 50 21 Long 73 57 29	20	Ebb	24.5	72	3.74 87
160	11.37	Off W. 137th St.	Midstream	Lat 40 50 21 Long 73 57 29	35	Ebb	24	63	3.74 87
161	11.57	Off Port Washington Point, Midstream		Lat 40 51 04 Long 73 57 13	1	Ebb	25	64	5.21 97
162	11.58	Off Port Washington Point, Midstream		Lat 40 51 04 Long 73 57 13	20	Ebb	24.5	72	3.74 87
163	12.00	Off Port Washington Point, Midstream		Lat 40 51 04 Long 73 57 13	35	Ebb	24	66	3.43 81
164	12.20	Off Inwood, Midstream		Lat 40 52 20 Long 73 56 24	1	Ebb	25	86	5.61 97
165	12.21	Off Inwood, Midstream		Lat 40 52 20 Long 73 56 24	20	Ebb	24.5	76	3.74 87
166	12.23	Off Inwood, Midstream		Lat 40 52 20 Long 73 56 24	35	Ebb	24	68	3.43 81

Ex. 34, p. 15

Dissolved Oxygen.

Hudson River

July 7, 1911.

(Continued)

Sample No.	Hour P.M.	Location of Samples	Approximate		Exact S. F. "	Feet below surface	Tidal Temp. Percent		Oxygen C.C. Percent per litre			
							our water	land				
157	12.43	Off Spuyten Duyvil-midstream	Lat	40 52 50	Long	73 56 04	1	Ebb	25	88	5.61	97
158	12.44	Off Spuyten Duyvil-midstream	Lat	40 52 50	Long	73 56 04	20	Ebb	24.5	76	4.33	77
159	12.46	Off Spuyten Duyvil-midstream	Lat	40 52 50	Long	73 56 04	30	Ebb	24.5	70	4.05	72
170	1.06	Off Riverdale-midstream	Lat	40 54 10	Long	73 55 25	1	Ebb	26	92	5.61	97
171	1.07	Off Riverdale-midstream	Lat	40 54 10	Long	73 55 25	20	Ebb	26	76	4.67	83
172	1.09	Off Riverdale-midstream	Lat	40 54 10	Long	73 55 25	30	Ebb	24.5	72	4.67	83
173	1.29	Off Mt. St. Vincent-midstream	Lat	40 54 50	Long	73 55 16	1	Ebb	26	92	5.61	97
174	1.30	Off Mt. St. Vincent-midstream	Lat	40 54 50	Long	73 55 16	20	Ebb	25	80	4.67	83
175	1.32	Off Mt. St. Vincent-midstream	Lat	40 54 50	Long	73 55 15	30	Ebb	24.5	76	4.67	83
176	1.52	Off Federal Sugar Refinery- Yonkers-midstream	Lat	40 55 47	Long	73 54 53	1	Ebb	26	92	5.61	97
177	1.53	Off Federal Sugar Refinery- Yonkers-midstream	Lat	40 55 47	Long	73 54 53	20	Ebb	26	76	4.67	83
178	1.56	Off Federal Sugar Refinery- Yonkers-midstream	Lat	40 55 47	Long	73 54 53	30	Ebb	24.5	74	4.23	83
179	2.15	Off Power-House-northern end of Yonkers-midstream	Lat	40 56 56	Long	73 54 53	1	End of Ebb	26	94	5.76	99
180	2.16	Off Power-House-northern end of Yonkers-midstream	Lat	40 56 56	Long	73 54 53	20	"	26	76	4.67	83
181	2.18	Off Power-House-northern end of Yonkers-midstream	Lat	40 56 53	Long	73 54 53	30	"	24.5	74	4.67	83

Ex. 94, p. 16

July 10, 1911

Dissolved Oxygen

Hudson River

High water at Governors Island at 9.43 a. m. Low water at 1.27 p. m.

High water at Bell Gate at 9.30 a. m. Low water at 2.10 p. m.

Sample No.	Hour P.M.	Location of Sample	Approximate	East °	North °	Tidal current	Temp. water cent	Per cent dissolved oxygen	Per cent saturation
192	12.00	Off East 109th St.-midstream		Lat 40 47 23	Long 73 54 07	1	23.5	34	1.80
193	12.01	Off East 109th St.-midstream		Lat 40 47 23	Long 73 56 07	15	24	32	1.80
194	12.15	Willis Ave Bridge-midstream		Lat 40 48 12	Long 73 56 07	1	23.5	32	1.87
195	12.16	Willis Ave Bridge-midstream		Lat 40 48 12	Long 73 58 47	15	24	32	1.87
196	12.20	24 Ave Bridge-midstream		Lat 40 48 23	Long 73 58 47	1	24	32	1.87
197	12.21	24 Ave Bridge-midstream		Lat 40 48 23	Long 73 58 58	15	24	32	1.87
198	12.46	4th Ave Bridge-midstream		Lat 40 46 36	Long 73 53 56	1	24	32	1.87
199	12.46	4th Ave Bridge-midstream		Lat 40 46 36	Long 73 56 02	15	24	32	1.87
200	1.00	Madison Ave Bridge-midstream		Lat 40 48 49	Long 73 53 02	1	24	32	1.87
201	1.01	Madison Ave Bridge-midstream		Lat 40 48 49	Long 73 56 02	15	24	32	1.87
202	1.15	145th St. Bridge-midstream		Lat 40 42 10	Long 73 58 00	1	24	32	1.87
203	1.16	145 St. Bridge-midstream		Lat 40 42 10	Long 73 58 00	15	24	32	1.87

Ex. 94, p. 17

Dissolved Oxygen

Hudson River

July 10, 1911

(Continued)

Sample No.	Hour p.m.	Location of Samples		East of surface	Feet below surface	Tidal current	Temp. Per-		Oxygen
		Approximate					cent water cent		
							Deg.	land per.	saturation
194	1.30	Central Bridge-midstream	Lat 40 49 40 Long 73 56 03	1	ebb	24	22	1.87	35
195	1.31	Central Bridge-midstream	Lat 40 49 40 Long 73 56 03	15	ebb	24	32	1.87	35
196	1.43	High Bridge-midstream	Lat 40 50 33 Long 73 55 51	1	ebb	24	32	2.18	40
197	1.46	High Bridge-midstream	Lat 40 50 33 Long 73 55 51	15	ebb	24	32	2.18	40
198	2.00	207 St. Bridge-midstream	Lat 40 51 46 Long 73 54 54	1	ebb	24	35	2.49	46
199	2.01	207 St. Bridge-midstream	Lat 40 51 46 Long 73 54 54	15	ebb	24	35	2.49	46
200	2.15	Kingbridge-midstream	Lat 40 52 25 Long 73 54 29	1	ebb	24	32	2.49	46
201	2.16	Kingbridge-midstream	Lat 40 52 25 Long 73 54 29	15	ebb	24	32	2.49	46
202	2.30	100' east of Spuyten Duyvil bridge	Lat 40 52 42 Long 73 53 29	1	ebb	24	34	2.80	53
203	2.31	100' east of Spuyten Duyvil bridge	Lat 40 52 42 Long 73 53 29	15	ebb	24	34	2.80	53

St. 34, p. 13

July 10, 1911

Eastern River.

Inspected Oregon

Low water at Governors Island at 1.27 P. M.

Sample No.	Hour P.M.	Location of Sample	Approximate	East of surface	Feet below surface	Tidal current	Temp. per-100 ft. water	Per-100 ft. water	Per-100 ft. water
204	3.00	100' east of Spuyten Duyvil bridge	Lat 40 52 42 N Long 73 56 29 W	42	1	Flood	81.5	80	5.27
205	3.01	100' east of Spuyten Duyvil bridge	Lat 40 52 42 N Long 73 56 29 W	42	1	Flood	81	76	5.27
206	3.15	Kingbridge-midstream	Lat 40 52 28 N Long 73 54 39 W	42	1	Flood	80	78	4.25
207	3.16	Kingbridge-midstream	Lat 40 52 28 N Long 73 54 39 W	42	1	Flood	80	78	4.25
208	3.30	St. bridge-midstream	Lat 40 51 44 N Long 73 54 54 W	44	1	Flood	80	64	5.74
209	3.31	St. bridge-midstream	Lat 40 51 44 N Long 73 54 54 W	44	1	Flood	80.5	64	5.74
210	3.45	Highbridge-midstream	Lat 40 50 25 N Long 73 55 51 W	25	1	Flood	79.5	56	5.43
211	3.46	Highbridge-midstream	Lat 40 50 25 N Long 73 55 51 W	25	1	Flood	79.5	56	5.43
212	4.00	Central bridge-midstream	Lat 40 49 40 N Long 73 56 08 W	40	1	Flood	79.5	52	5.13
213	4.01	Central bridge-midstream	Lat 40 49 40 N Long 73 56 08 W	40	1	Flood	79.5	52	5.13
214	4.15	St. bridge-midstream	Lat 40 49 10 N Long 73 56 00 W	10	1	Flood	79.5	46	5.80
215	4.16	St. bridge-midstream	Lat 40 49 10 N Long 73 56 00 W	10	1	Flood	79.5	46	5.80
216	4.30	Madison Ave Bridge-midstream	Lat 40 48 49 N Long 73 56 01 W	49	1	Flood	79.5	40	5.49
217	4.31	Madison Ave Bridge-midstream	Lat 40 48 49 N Long 73 56 01 W	49	1	Flood	79.5	40	5.49

Ex. 94, p. 19

Dissolved Oxygen

Harlem River July 30, 1911

(Continued)

Sample No.	Hour p.m.	Location of samples	Approximate	Feet below surface		Tidal current	Temp. water Deg. C	Percent land water	W. of current	Direction
				Exact	0					
218	4.45	4th Ave Bridge-midstream		Lat 40 40 36	1	Flood	25.5	40	5.10	41
				Long 73 54 02						
219	4.46	4th Ave Bridge-midstream		Lat 40 40 36	18	Flood	25.5	40	5.18	43
				Long 73 54 02						
220	5.00	56 Ave Bridge-midstream		Lat 40 40 38	1	Flood	25.3	30	3.87	30
				Long 73 53 58						
221	5.01	56 Ave Bridge-midstream		Lat 40 40 38	18	Flood	25.3	40	3.87	35
				Long 73 53 58						
222	5.16	Willie Ave Bridge-midstream		Lat 40 40 18	1	Flood	25.5	36	3.50	29
				Long 73 53 47						
223	5.16	Willie Ave Bridge-midstream		Lat 40 40 18	18	Flood	25.5	36	3.50	29
				Long 73 53 47						
224	5.30	Foot of East 109 St-midstream		Lat 40 47 33	1	Flood	25.2	34	3.54	24
				Long 73 56 07						
225	5.31	Foot of East 109 St-midstream		Lat 40 47 33	18	Flood	25.2	34	3.54	24
				Long 73 56 07						

Sta. 94, p. 80

July 11, 1911

Buttermilk Channel

Dissolved Oxygen
High water at Governors Island at 8.13 a.m. Low water at 2.06 p.m.

Sample No.	Hour a.m.	Location of Samples	Approximate	Exact O' " surface	Tidal current	Temp. water Deg C	Per- cent O. C.	Oxygen land peratura- water liti-on %
226	9.50	Inner end of slip foot of De- Graw St., Brooklyn		Lat 40 41 13 Long 74 00 26	1 Ebb	26	38	0.31 6
227	9.52	Inner end of slip foot of De- Graw St., Brooklyn		Lat 40 41 13 Long 74 00 26	10 Ebb	25.5	34	0.31 6
228	10.07	Outer end of DeGraw St. Slip		Lat 40 41 14 Long 74 00 29	1 Ebb	25.5	38	0.62 12
229	10.09	Outer end of DeGraw St. slip		Lat 40 41 14 Long 74 00 29	20 Ebb	25.5	34	1.87 36
230	10.29	100 feet off outer end of DeGraw St. slip		Lat 40 41 14 Long 74 00 31	1 Ebb	25.5	36	0.93 18
231	10.30	100 feet off outer end of DeGraw St. slip		Lat 40 41 14 Long 74 00 31	20 Ebb	25.5	34	2.80 54
232	10.31	100 feet off outer end of DeGraw St. slip		Lat 40 41 14 Long 74 00 31	30 Ebb	25.5	34	3.11 60
233	10.50	200 feet off outer end of DeGraw St. slip		Lat 40 41 15 Long 74 00 32	1 Ebb	25.5	36	3.11 60
234	10.51	200 feet off outer end of DeGraw St. slip		Lat 40 41 15 Long 74 00 32	20 Ebb	25.5	34	3.11 60
235	10.53	200 feet off outer end of DeGraw St. slip		Lat 40 41 15 Long 74 00 32	35 Ebb	25.5	34	3.11 60
236	11.12	Inner end of slip east of Pier 32		Lat 40 41 14 Long 74 00 23	1 Ebb	26	36	0.31 6
237	11.14	Inner end of slip east of Pier 32		Lat 40 41 14 Long 74 00 23	10 Ebb	25.5	34	0.93 18
238	11.19	Outer end of slip east of Pier 32		Lat 40 41 16 Long 74 00 28	1 Ebb	26	36	0.62 12
239	11.20	Outer end of slip east of Pier 32		Lat 40 41 16 Long 74 00 28	15 Ebb	25.5	34	1.87 36
240	11.35	200 feet off Pier 29		Lat 40 41 22 Long 74 00 26	1 Ebb	25.5	34	3.11 60
241	11.37	200 feet off Pier 29		Lat 40 41 22 Long 74 00 26	20 Ebb	25.5	34	3.43 66

Ex. 94. p.21

Butternilk Channel July 11, 1911

(Continued)

Dissolved Oxygen

Sample No.	Hour a.m.	Location of Samples Approximate	Feet below surface		Tidal current	Temp. Deg.C	Percent water	Oxygen per litre	Percent saturation
			Exact	0'					
242	11.59	200 feet off Pier 29	Lat 40 41 22	35	Ebb	25.5	34	5.45	66
243	11.50	Outer end of slip west of Pier 29	Long 74 00 25						
244	11.51	Outer end of slip west of Pier 29	Lat 40 41 19	1	Ebb	26	34	2.49	50
245	12.06	Inner end of slip west of Pier 29	Long 74 00 25	20	Ebb	25.5	34	2.49	50
246	12.08	Inner end of slip west of Pier 29	Lat 40 41 18	1	Ebb	26	34	1.50	30
247	12.25	100 feet off east of Pier 33	Long 74 00 18	10	Ebb	26	34	1.87	36
248	12.24	100 feet off east end of Pier 33	Lat 40 41 10	1	Ebb	25.5	34	2.18	40
249	12.26	100 feet off east end of Pier 33	Long 74 00 34	20	Ebb	25.5	34	2.80	54
250	12.45	200 feet off east end of Pier 33	Lat 40 41 10	30	Ebb	25.5	34	2.80	54
251	12.46	200 feet off east end of Pier 33	Long 74 00 34	1	Ebb	25.5	34	3.11	60
252	12.48	200 feet off east end of Pier 33	Lat 40 41 11	20	Ebb	25.5	34	3.11	60
253	1.18	200 feet off west end of Pier 33	Long 74 00 36	35	Ebb	25.5	34	3.11	60
254	1.19	200 feet off west end of Pier 33	Lat 40 41 04	1	Ebb	25.5	34	3.11	60
255	1.21	200 feet off west end of Pier 33	Long 74 00 45	20	Ebb	25.5	34	3.43	66
256	1.40	Entrance to Atlantic Basin	Lat 40 41 04	35	Ebb	25.5	34	3.43	66
257	1.42	Entrance to Atlantic Basin	Long 74 00 45	1	Ebb	25.5	34	2.18	40
			Lat 40 41 01	20	Ebb	25.5	34	2.49	50

Ex. 94. p. 22

Dissolved Oxygen.

Buttermilk Channel July 11, 1911.
(Continued.)

Sample No.	Hour P.m.	Location of Samples		Feet below surface	Tidal current	Temp. water cent deg C	Per- cent		
		Approximate	Exact 0' "				Oxygen C.C. per litre	saturation	
258	1.57	South side of Atlantic Basin	Lat 40 40 59 Long 74 00 23	1	2bb	26	34	1.24	24
259	1.58	" " " "	Lat 40 40 59 Long 74 00 23	15	3bb	26	34	1.24	24
260	2.15	Upper bay-400 feet off Pier 39	Lat 40 40 42 Long 74 01 18	1	3bb	25.5	34	2.80	54
261	2.16	" " " "	Lat 40 40 42 Long 74 01 18	70	3bb	25.5	34	3.43	66
262	2.30	Upper bay-600 feet off Pier 39	Lat 40 40 42 Long 74 01 20	1	3bb	25.5	34	3.43	66
263	2.31	" " " "	Lat 40 40 42 Long 74 01 20	30	3bb	25.5	34	3.43	66
264	2.45	Upper bay-400 feet off Erie Basin entrance	Lat 40 40 19 Long 74 01 15	1	3bb	25.5	34	3.11	60
265	2.46	" " " "	Lat 40 40 19 Long 74 01 15	30	2bb	25.5	34	3.43	66
266	3.00	Upper bay-600 feet off Erie Basin entrance	Lat 40 40 19 Long 74 01 17	1	3bb	25.5	34	3.43	66
267	3.01	" " " "	Lat 40 40 19 Long 74 01 17	30	3bb	25.5	34	3.43	66
268	3.15	Upper bay-500 feet off 53d St., Brooklyn	Lat 40 39 10 Long 74 01 37	1	2bb	25.5	34	3.43	66
269	3.16	" " " "	Lat 40 39 10 Long 74 01 37	30	2bb	25.5	34	3.43	66
270	3.30	Gowanus bay-near anchorage buoy	Lat 40 39 45 Long 74 01 50	1	Flood	25.5	32	3.43	66
271	3.31	" " " "	Lat 40 39 45 Long 74 01 50	30	Flood	25.5	34	3.43	66

Dissolved Oxygen
Hudson River
July 12, 1911
High water occurred at Governors Island at 9.55 a. m. Low water occurred at 2.47 p. m.

Sample No.	Hour a.m.	Location of Samples Approximate	Tidal		Temp. Water Deg. C	Percent land water	Oxygen per saturation
			Feet below surface	current			
272	9.50	East River-midway between Battery and Governors Is.	Lat 40 41 52 Long 74 00 59	1 Flood	24.5	32	3.11 59
273	9.51	"	Lat 40 41 52 Long 74 00 59	20 Flood	24.5	32	3.43 66
274	9.53	"	Lat 40 41 52 Long 74 00 59	36 Flood	24.5	32	3.43 66
275	10.00	Hudson River-Battery to Yonkers. Midway between Pier A and C.R.R. of N.J.	Lat 40 42 19 Long 74 01 34	1 Flood	24.5	32	3.43 65
276	10.01	"	Lat 40 42 19 Long 74 01 34	20 Flood	24.5	32	3.43 65
277	10.02	Hete-Flood currents still running.	Lat 40 42 19 Long 74 01 34	40 Flood	24.5	32	3.43 66
278	11.00	Midway between Pier A and C.R.R. of N.J.	Lat 40 42 19 Long 74 01 34	1 Ebb	25.5	40	3.43 65
279	11.01	"	Lat 40 42 19 Long 74 01 34	20 Ebb	25.	32	3.43 66
280	11.03	"	Lat 40 42 19 Long 74 01 34	40 Ebb	25.	32	3.43 66
281	11.20	Off Canal St. Midstream	Lat 40 43 38 Long 74 01 17	1 Ebb	25.5	44	3.43 65
282	11.51	"	Lat 40 43 38 Long 74 01 17	20 Ebb	25.	46	3.43 66
283	11.23	"	Lat 40 43 38 Long 74 01 17	40 Ebb	25.	46	3.43 66
284	11.40	Off West 224 St. Midstream	Lat 40 45 09 Long 74 01 00	1 Ebb	26.5	48	3.43 65
298	11.41	"	Lat 40 45 09 Long 74 01 00	20 Ebb	25.	36	3.43 66

Dissolved Oxygen Hudson River July 12, 1911
 High water occurred at Governors Island at 6.55 a.m. Low water occurred at 2.47 p.m.

Sample No.	Hour a.m.	Location of Samples		Fath below surface	Tidal current	Temp. water in Deg. C	Percent light water	Oxygen per cent saturation
		Approximate	Exact					
286	11.43	Off West 23 St. Midstream	Lat 40 45 09 Long 74 01 00	40	Ebb	25.	36	3.43
287	12.00	Off West 42 St. Midstream	Lat 40 45 50 Long 74 00 28	1	Ebb	25.5	52	3.74
288	12.01	Off West 42 St. Midstream	Lat 40 45 50 Long 74 00 28	20	Ebb	25.	40	3.43
289	12.05	Off West 42 St. Midstream	Lat 40 45 50 Long 74 00 28	40	Ebb	25.	40	3.43
290	12.20	Off West 72 St. Midstream	Lat 40 47 02 Long 73 59 42	1	Ebb	25.5	52	4.05
291	12.21	Off West 72 St. Midstream	Lat 40 47 02 Long 73 59 42	20	Ebb	25.	40	3.74
292	12.25	Off West 72 St. Midstream	Lat 40 47 02 Long 73 59 42	40	Ebb	25.	40	3.74
293	12.40	Off West 110 St. Midstream	Lat 40 46 32 Long 73 58 40	1	Ebb	25.5	56	4.67
294	12.41	Off West 110 St. Midstream	Lat 40 46 32 Long 73 58 40	20	Ebb	25.	44	3.74
295	12.43	Off West 110 St. Midstream	Lat 40 46 32 Long 73 58 40	40	Ebb	25.	44	3.74
296	1.00	Off West 129 St. Midstream	Lat 40 49 16 Long 73 56 10	1	Ebb	25.5	64	5.27
297	1.01	Off West 129 St. Midstream	Lat 40 49 16 Long 73 56 10	20	Ebb	25.	48	4.06
298	1.05	Off West 129 St. Midstream	Lat 40 49 16 Long 73 56 10	26	Ebb	25.	48	4.05
299	1.20	Off West 157 St. Midstream	Lat 40 50 21 Long 73 57 29	1	Ebb	25.5	64	5.27

Ex. 94. p. 55

Dissolved Oxygen
 Medeon River
 July 12, 1911
 High water occurred at low-water island at 8.33 a.m. Low water occurred at 8.47 p.m.

Sample No.	Hour p.m.	Location of Sample		Feet below surface	Total current	Temp. deg. C	Percent land water	Oxygen per litre	C.C. per litre
		Approximate	Exact						
214	2.00	Off Mt. St. Vincent, Mid-stream	Lat 40 54 50 Long 73 56 18	1	25b	26.	80	5.61	100
215	3.01	Off Mt. St. Vincent, Mid-stream	Lat 40 54 50 Long 73 55 25	20	25b	25.5	64	4.28	80
216	3.03	Off Mt. St. Vincent, Mid-stream	Lat 40 54 50 Long 73 55 18	20	25b	25.5	64	4.28	80
217	3.20	Off Federal Sugar Refinery, Yonkers midstream	Lat 40 55 47 Long 73 54 52	1	25b	26.	80	5.61	100
218	3.21	Off Federal Sugar Refinery, Yonkers midstream	Lat 40 55 47 Long 73 54 53	20	25b	25.5	84	4.28	80
219	3.23	Off Federal Sugar Refinery, Yonkers midstream	Lat 40 55 47 Long 73 54 53	20	25b	25.5	64	4.28	80
220	3.40	Off Power House, upper end of Yonkers, midstream	Lat 40 56 38 Long 73 54 38	1	25b	26.	84	5.61	100
221	3.41	Off Power House, upper end of Yonkers, midstream	Lat 40 56 38 Long 73 54 38	20	25b	25.5	64	4.28	80
222	3.43	Off Power House, upper end of Yonkers, midstream	Lat 40 56 38 Long 73 54 38	20	25b	25.5	64	4.28	80

Ex. 34, p. 87

July 18, 1911.

Hudson River

Dissolved Oxygen

High water occurred at Governors Island at 8.55 a.m. Low water at 3.47 p.m.

Sample No.	Hour a.m.	Approximate Location of Sample	Lat	Long	Depth fathoms	Tidal current	Temp. water	Percent dissolved oxygen	Oxygen per litre
800	1.31	Off West 187 St. Midstream	Lat 40 50 31	Long 73 57 29	20	ebb	25.	48	4.05
801	1.35	Off West 187 St. Midstream	Lat 40 50 31	Long 73 57 29	20	ebb	25.	40	4.05
802	1.40	Off Fort Washington Point. Midstream	Lat 40 51 04	Long 73 57 29	1	ebb	26.	68	5.61
803	1.41	Off Fort Washington Point. Midstream	Lat 40 51 04	Long 73 57 13	20	ebb	26.	48	4.05
804	1.43	Off Fort Washington Point. Midstream	Lat 40 51 04	Long 73 57 13	20	ebb	26.	48	4.05
805	2.00	Off Inwood. Midstream	Lat 40 52 20	Long 73 56 24	1	ebb	26.	68	5.61
806	2.01	Off Inwood. Midstream	Lat 40 52 20	Long 73 56 24	20	ebb	26.	82	4.05
807	2.05	Off Inwood. Midstream	Lat 40 52 20	Long 73 56 24	20	ebb	26.	82	4.05
808	2.20	Off Spuyten Duyvil. Midstream	Lat 40 52 50	Long 73 56 04	1	ebb	26.	80	5.61
809	2.21	Off Spuyten Duyvil. Midstream	Lat 40 52 50	Long 73 56 04	20	ebb	26.5	86	4.05
810	2.23	Off Spuyten Duyvil. Midstream	Lat 40 52 50	Long 73 56 04	20	ebb	26.5	82	4.05
811	3.40	Off Riverdale. Midstream	Lat 40 54 10	Long 73 56 26	2	ebb	26.	80	5.61
812	3.41	Off Riverdale. Midstream	Lat 40 54 10	Long 73 56 26	20	ebb	26.5	80	4.23
813	3.43	Off Riverdale. Midstream	Lat 40 54 10	Long 73 56 26	20	ebb	26.5	48	4.20

Dissolved Oxygen
 High water occurred at Governors Island at 9.23 a.m. Low water occurred at 3.02 p.m.
 Buttermilk Channel, East River. July 13, 1911

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. Deg. C	Percent water land	OXYGEN	
		Approximate	Exact					U.C. per litre	Percent saturation
323	9.20	200' off outer end of De Graw St. slip	Lat 40 41 15 Long 74 00 32	1	Flood	25.5	32	3.11	60
324	9.21	200' off outer end of De Graw St. slip	Lat 40 41 15 Long 74 00 32	20	Flood	25.	32	3.11	60
325	9.23	200' off outer end of De Graw St. slip	Lat 40 41 15 Long 74 00 32	35	Flood	25.	32	3.11	60
326	9.28	50' off outer end of De Graw St. slip	Lat 40 41 14 Long 74 00 30	1	Flood	25.5	34	1.24	24
327	9.29	50' off outer end of De Graw St. slip	Lat 40 41 14 Long 74 00 30	20	Flood	25.	32	2.80	55
328	9.31	50' off outer end of De Graw St. slip	Lat 40 41 14 Long 74 00 30	30	Flood	25.	32	3.11	60
329	9.46	De Graw St. slip outer end	Lat 40 41 14 Long 74 00 29	1	Flood	26.	34	0.95	18
330	9.48	De Graw St. slip outer end	Lat 40 41 14 Long 74 00 29	20	Flood	25.5	34	2.18	42
331	10.02	De Graw St. slip inner end	Lat 40 41 13 Long 74 00 25	1	Flood	26.	34	0.47	9
332	10.04	De Graw St. slip inner end	Lat 40 41 13 Long 74 00 25	10	Flood	26.	34	0.62	12
333	10.20	200' off Pier 29	Lat 40 41 22 Long 74 00 26	1	Flood	25.5	34	3.11	60
334	10.21	200' off Pier 29	Lat 40 41 22 Long 74 00 26	20	Flood	25.	32	3.13	60
335	10.23	200' off Pier 29	Lat 40 41 22 Long 74 00 26	30	Flood	25.	32	3.11	60
336	10.40	50' off Pier 29, Brooklyn	Lat 40 41 21 Long 74 00 25	1	Flood	25.5	34	2.49	48
337	10.42	50' off Pier 29, Brooklyn	Lat 40 41 21 Long 74 00 25	30	Flood	25.	32	3.11	60

Ex. 94. p.23

Dissolved Oxygen Buttermilk Channel, East River. July 18, 1911.
 High water occurred at Governors Island at 9.23 a.m. Low water occurred at 3.02 p.m.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. Log-C	Percent water	O.C. per litre	Oxygen percent saturation
		Approximate	Exact					
336	10.57	Slip just west of Pier 29 midway up slip	Lat 40 41 18 Long 74 00 21	1	Flood 25.5	34	1.50	30
339	10.58	Slip just west of Pier 29 midway up slip	Lat 40 41 18 Long 74 00 21	15	Flood 25.	32	1.50	30
340	11.10	200' off east end of Pier 33	Lat 40 41 11 Long 74 00 35	1	Flood 25.5	34	3.74	72
341	11.11	200' off east end of Pier 33	Lat 40 41 11 Long 74 00 35	20	Flood 25.	32	3.74	72
342	11.13	200' off east end of Pier 33	Lat 40 41 11 Long 74 00 35	35	Flood 25.	32	3.74	72
343	11.30	50' off east end of Pier 33	Lat 40 41 10 Long 74 00 38	1	Flood 25.5	34	3.74	72
344	11.31	50' off east end of Pier 33	Lat 40 41 10 Long 74 00 38	20	Flood 26.	32	3.74	72
345	11.32	50' off east end of Pier 33	Lat 40 41 10 Long 74 00 38	35	Flood 25.	32	3.74	72
346	11.46	Entrance to Atlantic basin	Lat 40 41 01 Long 74 00 45	1	Ebb 25.5	34	3.74	72
347	11.50	South extremity of Atlantic Basin	Lat 40 40 59 Long 74 00 23	1	Ebb 25.5	34	1.24	24
348	11.51	South extremity of Atlantic Basin	Lat 40 40 59 Long 74 00 23	10	Ebb 25.5	24	1.24	24

Ex. 94, p. 29

July 13, 1911.

Course from Governors Island to Atlantic Ocean.

High water occurred at Governors Island at 10.23 a.m. Low water at 4.27 p.m.

High water occurred at Sandy Hook at 8.50 a.m. Low water at 2.30 p.m.

Sample No.	Hour P.m.	Location of Samples		Feet below surface	Tidal current	Temp. Deg. C.	Percent water	Oxygen per litre	Percent saturation
		Approximate	Exact						
349	12.00	East River midway between Governors Is. and pier 36, Brooklyn	Lat 40 40 53 Long 74 01 19	1	Ebb	24.	32	3.11	59
350	12.01	East River midway between Governors Is. and pier 36, Brooklyn	Lat 40 40 53 Long 74 01 19	20	Ebb	24.	32	3.11	59
351	12.03	East River midway between Governors Is. and pier 36, Brooklyn	Lat 40 40 53 Long 74 01 19	35	Ebb	24.	32	3.11	59
352	12.20	Upper bay-near nun buoy 14 off Gowanus	Lat 40 40 04 Long 74 02 09	1	Ebb	24.5	32	3.11	59
353	12.21	Upper bay-near nun buoy 14 off Gowanus	Lat 40 40 04 Long 74 02 09	20	Ebb	24.	30	3.11	59
354	12.23	Upper bay-near nun buoy 14 off Gowanus	Lat 40 40 04 Long 74 02 09	30	Ebb	24.	30	3.11	59
355	12.44	Upper bay-near Robbins Reef bell-buoy	Lat 40 39 15 Long 74 03 50	1	Ebb	24.5	34	3.43	65
356	12.45	Upper bay-near Robbins Reef Bell buoy	Lat 40 39 15 Long 74 03 50	20	Ebb	24.	32	3.43	65
357	12.47	Upper bay-near Robbins Reef bell-buoy	Lat 40 39 15 Long 74 03 50	40	Ebb	24.	28	3.43	65
358	1.07	Narrows-midway between forts	Lat 40 36 25 Long 74 02 48	1	Ebb	22.	26	3.43	66
359	1.09	Narrows-midway between forts	Lat 40 36 25 Long 74 02 48	40	Ebb	22.	20	3.43	64
360	1.12	Narrows-midway between forts	Lat 40 36 25 Long 74 02 48	80	Ebb	22.	20	3.43	64

Ex. 94. p. 30

July 13, 1911

Course from Governors Island to Atlantic Ocean.

High water occurred at Governors Island at 10.25 a.m. Low water at 4.27 p.m.

High water occurred at Sandy Hook at 8.50 a.m. Low water at 2.20 p.m.

Sample No.	Hour p.m.	Location of Samples		Tidal current	Temp. water Deg. C	Percent land water	Oxygen per litre	Percent oxygen
		Approximate	Exact	Feet below surface				
361	1.35	Lower bay by Craven shoal buoy	Lat 40 35 10 Long 74 02 30	1	23b	23.	2.74	70
362	1.35	Lower bay by Craven shoal buoy	Lat 40 35 10 Long 74 02 30	20	23b	21.5	2.74	70
363	1.35	Lower bay by Craven shoal buoy	Lat 40 35 10 Long 74 02 30	40	23b	21.5	2.74	70
364	2.00	Lower bay-Ambrose channel buoy	Lat 40 32 20 Long 74 01 15	1	23b	23.	2.27	99
365	2.01	Lower bay-Ambrose channel buoy	Lat 40 32 20 Long 74 01 15	20	23b	21.5	2.27	99
366	2.03	Lower bay-Ambrose channel buoy	Lat 40 32 20 Long 74 01 15	40	23b	21.5	2.27	99
367	2.30	Lower bay-Ambrose channel buoy	Lat 40 30 25 Long 73 57 35	1	23b	21.	2.61	100
368	2.31	Lower bay-Ambrose channel buoy	Lat 40 30 25 Long 73 57 35	20	23b	20.	2.61	100
369	2.35	Lower bay-Ambrose channel buoy	Lat 40 30 25 Long 73 57 35	40	23b	20.	2.61	100
370	3.00	Atlantic Ocean-east of whistling buoy outside Ambrose channel	Lat 40 29 00 Long 73 53 00	1	23b	21.	2.61	100
371	3.01	Atlantic Ocean-east of whistling buoy outside Ambrose channel	Lat 40 29 00 Long 73 53 00	25	23b	20.	2.61	100
372	3.03	Atlantic Ocean-east of whistling buoy outside Ambrose Channel	Lat 40 29 00 Long 73 53 00	50	23b	20.	2.61	100

Ex. 34. p.31

July 14, 1911.

Course from Governors Island to Atlantic Ocean.

Dissolved Oxygen

High water occurred at Governors Island at 9.33 a.m. Low water at 4.07 p.m.

High water occurred at Sandy Hook at 9.23 a.m. Low water at 3.15 p.m.

Sample No.	Hour a.m.	Location of Samples	Exact	Feet below surface	Tidal current	Temp. water land	Percent per litre	Oxygen saturation
373	8.00	East River-midway between Governors Is. and pier 36, Brooklyn	Lat 40 40 53 Long 74 01 19	1	Flood	23.	30	3.43 62
374	8.01	East River-midway between Governors Is. and pier 36, Brooklyn	Lat 40 40 53 Long 74 01 19	20	Flood	22.	22	3.43 62
375	8.03	East River-midway between Governors Is. and pier 36, Brooklyn	Lat 40 40 53 Long 74 01 19	36	Flood	22.	20	3.43 62
376	8.20	Upper bay-near run buoy 14 off Gowanus	Lat 40 40 04 Long 74 02 09	1	Flood	23.	30	3.43 62
377	8.21	Upper bay-near run buoy 14 off Gowanus	Lat 40 40 04 Long 74 02 09	20	Flood	22.	20	3.43 62
378	8.23	Upper bay-near run buoy 14 off Gowanus	Lat 40 40 04 Long 74 02 09	30	Flood	22.	20	3.43 62
379	8.40	Upper bay-near Robbins Reef bell buoy	Lat 40 39 15 Long 74 03 50	1	Flood	23.	30	3.74 68
380	8.41	Upper bay-near Robbins Reef bell buoy	Lat 40 39 15 Long 74 03 50	20	Flood	21.5	26	4.08 74
381	8.43	Upper bay-near Robbins Reef bell buoy	Lat 40 39 15 Long 74 03 50	40	Flood	21.5	24	4.08 74
382	9.16	Narrows-midway between forts	Lat 40 36 26 Long 74 02 48	1	Flood	22.	26	4.83 79
383	9.16	Narrows-midway between forts	Lat 40 36 26 Long 74 02 48	40	Flood	21.5	24	4.67 85
384	9.16	Narrows-midway between forts	Lat 40 36 26 Long 74 02 48	60	Flood	21.5	24	4.67 85

July 14, 1911.

Course from Governors Island to Atlantic Ocean

High water occurred at Governors Island at 9.35 a.m. Low water at 4.07 p.m.

High water occurred at Sandy Hook at 9.22 a.m. Low water at 3.15 p.m.

Sample No.	Hour a.m.	Approximate	Position of Buoy		Tidal current	Temp. water	Percent land water	Depth	Direction
			Lat	Long					
898	11.50	Atlantic Ocean, midway between Ambrose channel buoy and whistling buoy far.	40 59 50	73 51 40	End of Flood	16	0	8.96	100
899	11.58	Atlantic Ocean, midway between Ambrose channel buoy and whistling buoy far.	40 59 50	73 51 40	End of Flood	16.8	0	8.96	100

Ex. 94. p. 24

Dissolved Oxygen Kill van Kull July 17th, 1911.
High water occurred at Governors Island at 12.08 a.m. Low water at 6.27 p.m.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. water per Deg. C	Percent land water	Oxygen	
		Approximate	Exact " "				C.C. per litre	Percent saturation
400	10.40	Upper New York bay, near Robbins Reef bell buoy	Lat 40 39 15 Long 74 03 50	1 Flood	23	30	5.74	68
401	10.41	Upper New York bay, near Robbins Reef bell buoy	Lat 40 39 15 Long 74 03 50	20 Flood	22	24	5.74	68
402	10.43	Upper New York bay, near Robbins Reef bell buoy	Lat 40 39 15 Long 74 03 50	40 Flood	22	24	5.74	68
403	11.00	Kill van Kull off Jersey St. New Brighton, S.I. midstream	Lat 40 38 57 Long 74 06 25	1 Flood	23	32	5.45	62
404	11.01	Kill van Kull off Jersey St. New Brighton, S.I. midstream	Lat 40 38 57 Long 74 06 25	20 Flood	22	24	5.74	66
405	11.08	Kill van Kull off Jersey St. New Brighton, S.I. midstream	Lat 40 38 57 Long 74 06 25	40 Flood	22	24	5.74	68
406	11.20	Kill van Kull off Sailors Snug Harbor, midstream	Lat 40 38 50 Long 74 06 07	1 Flood	23	32	5.45	62
407	11.21	Kill van Kull off Sailors Snug Harbor, midstream	Lat 40 38 50 Long 74 06 07	20 Flood	22	28	5.74	66
408	11.25	Kill van Kull off Sailors Snug Harbor, midstream	Lat 40 38 50 Long 74 06 07	35 Flood	22	28	5.74	66
409	11.40	Kill van Kull off Port Richmond ferry, midstream	Lat 40 38 35 Long 74 07 52	1 Flood	23	32	5.45	62
410	11.41	Kill van Kull off Port Richmond ferry, midstream	Lat 40 38 35 Long 74 07 52	20 Flood	22	28	5.74	66

Dissolved Oxygen Kill van Kull July 17, 1911.
 High water occurred at Governors Island at 12.06 a.m. Low water at 6.27 p.m.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water Deg. C.	Percent land water	Oxygen per litre	Percent saturation
		Approximate	Exact						
411	11.43	Kill van Kull off Port Richmond ferry, mid-stream	Lat 40 38 25 Long 74 07 52	40	Flood	22	28	3.74	68
412	12.00	Kill van Kull at buoy S 2 off Bergen Pt. Midstream	Lat 40 38 35 Long 74 08 24	1	Flood	23	32	3.43	62
413	12.01	Kill van Kull at buoy S 2 off Bergen Pt. Midstream	Lat 40 38 35 Long 74 08 24	20	Flood	22	30	3.43	62
414	12.03	Kill van Kull at buoy S 2 off Bergen Pt. Midstream	Lat 40 38 35 Long 74 08 24	40	Flood	22	30	3.43	62
415	12.20	Kill van Kull-100' south of Bergen Pt. light	Lat 40 38 32 Long 74 08 56	1	Flood	23	32	3.43	62
416	12.21	Kill van Kull-100' south of Bergen Pt. light	Lat 40 38 32 Long 74 08 56	20	Flood	22	30	3.43	62
417	12.23	Kill van Kull-100' south of Bergen Pt. light	Lat 40 38 32 Long 74 08 56	30	Flood	22	30	3.43	62

Ex. 94. p. 36

Dissolved Oxygen East River, Cross-section-Lawrence Point to Stony Point. July 18, 1911.
 High water occurred at Governors Island at 12.53 p.m. Low water at 7.17 a.m.
 High water occurred at Hell Gate at 3.30 p.m. Low water at 9. a.m.

Sample No.	Hour a.m.	Location of Sample		Exact O.	Feet below surface	Tidal current	Temp. Deg.C	Percent water	Oxygen	
		Approximate							C.C. litre	Percent saturation
419	10.10	By buoy 7, near Lawrence Point, Astoria	Lat 40 47 34 Long 73 54 30		1	Flood	21.5	24	3.24	59
419	10.11	By buoy 7, near Lawrence Point, Astoria	Lat 40 47 34 Long 73 54 30		20	Flood	21	24	3.24	59
420	10.13	By buoy 7, near Lawrence Point, Astoria	Lat 40 47 34 Long 73 54 30		40	Flood	21	24	3.24	59
421	10.23	Midway between Lawrence Point and Stony Point	Lat 40 47 45 Long 73 54 31		1	Flood	21.5	24	3.24	59
422	10.24	Midway between Lawrence Point and Stony Point	Lat 40 47 45 Long 73 54 31		25	Flood	21	24	3.24	59
423	10.26	Midway between Lawrence Point and Stony Point	Lat 40 47 45 Long 73 54 31		50	Flood	21	24	3.24	59
424	10.46	200' off East 134 St. Ferry house at Stony Point	Lat 40 47 56 Long 73 54 31		1	Flood	21.5	24	3.24	59
425	10.46	200' off East 134 St. Ferry house at Stony Point	Lat 40 47 56 Long 73 54 31		25	Flood	21	24	3.24	59
426	10.48	200' off East 134 St. Ferry house at Stony Point	Lat 40 47 56 Long 73 54 31		50	Flood	21	24	3.24	59
427	11.30	By buoy 7, near Lawrence Pt.	Lat 40 47 34 Long 73 54 30		1	Flood	21.5	29	3.09	56
428	11.31	By buoy 7, near Lawrence Pt.	Lat 40 47 34 Long 73 54 30		20	Flood	21	26	3.09	56
429	11.33	By buoy 7, near Lawrence Pt.	Lat 40 47 34 Long 73 54 30		40	Flood	21	26	3.09	56

Dissolved Oxygen West River, Grove-section-Lawrence Point to Piny Point. July 28, 1911

High water occurred at Governors Island at 12.55 p.m. Low water at 7.17 a.m.

High water occurred at Hell Gate at 2.20 p.m. Low water at 9. a.m.

Sample No.	Hour a.m.	Location of Sample		Fath below surface	Tidal current	Temp. water land Deg.-C	Percent water	Oxygen per litre	Percent saturation
		Approximate	Exact						
430	11.53	Midway between Lawrence and Stony Points	Lat 40 47 45 Long 73 54 31	1	Flood	21.5	28	3.09	56
431	11.54	Midway between Lawrence and Stony Points	Lat 40 47 48 Long 73 54 31	25	Flood	21	26	3.09	56
432	11.56	Midway between Lawrence and Stony Points	Lat 40 47 48 Long 73 54 31	50	Flood	21	26	3.09	56
433	12.17	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	1	Flood	21.5	28	3.09	56
434	12.18	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	25	Flood	21	26	3.09	56
435	12.20	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	50	Flood	21	26	3.84	59
436	1.	By buoy 7 near Lawrence Point	Lat 40 47 34 Long 73 54 30	1	Flood	21.5	30	2.95	54
437	1.01	By buoy 7 near Lawrence Pt.	Lat 40 47 34 Long 73 54 30	20	Flood	21	28	2.95	54
438	10.3	By buoy 7 near Lawrence Pt.	Lat 40 47 34 Long 73 54 30	40	Flood	21	28	2.95	54
439	1.03	Midway between Lawrence and Stony Points	Lat 40 47 46 Long 73 54 31	1	Flood	21.5	30	2.95	54
440	1.24	Midway between Lawrence and Stony Points	Lat 40 47 45 Long 73 54 31	25	Flood	21	28	2.95	54
441	1.26	Midway between Lawrence and Stony Points	Lat 40 47 45 Long 73 54 31	50	Flood	21	28	3.09	56
442	1.46	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	1	Flood	21.5	30	2.95	54
443	1.47	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	25	Flood	21	28	2.95	54

Dissolved Oxygen East River, Cross-section-Lawrence Point to Stony Point, July 18, 1911
 High water occurred at Governors Island at 12.55 p.m. Low water at 7.17 a.m.
 High water occurred at Hell Gate at 3.20 p.m. Low water at 9. a.m.

Sample No.	Hour P.m.	Location of Sample		Tidal current	Temp. water	Percent lead	Oxygen per litre
		Approximate	Exact				
			0' "	below surface	Deg. C		saturation
444	1.49	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	50 Flood	21	28	2.98 56
445	2.50	By buoy v near Lawrence Point	Lat 40 47 34 Long 73 54 30	1 Flood	21.5	30	2.95 54
446	2.51	By buoy 7 near Lawrence Point	Lat 40 47 34 Long 73 54 30	20 Flood	21	28	2.96 54
447	2.55	By buoy 7 near Lawrence Point	Lat 40 47 34 Long 73 54 30	40 Flood	21	28	2.96 54
448	2.50	Midway between Lawrence Point and Stony Point	Lat 40 47 45 Long 73 54 31	1 Flood	21.5	30	2.96 54
449	2.51	Midway between Lawrence Point and Stony Point	Lat 40 47 45 Long 73 54 31	25 Flood	21	28	2.95 54
450	2.53	Midway between Lawrence Point and Stony Point	Lat 40 47 45 Long 73 54 31	50 Flood	21	28	2.96 54
451	3.10	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	1 Flood	21.5	30	2.95 54
452	3.11	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	25 Flood	21	28	2.95 54
453	3.13	200' off E. 134 St. ferry house	Lat 40 47 56 Long 73 54 31	50 Flood	21	29	2.96 54
454	3.30	By buoy 7 near Lawrence Point	Lat 40 47 34 Long 73 54 30	1 Flood	21.5	30	2.95 54
455	3.31	By buoy 7 near Lawrence Point	Lat 40 47 34 Long 73 54 30	20 Flood	21	28	2.96 54
456	3.33	By buoy 7 near Lawrence Point	Lat 40 47 34 Long 73 54 30	40 Flood	21	28	2.95 54
457	3.45	Midway between Lawrence Point and Stony Point	Lat 40 47 45 Long 73 54 31	1 Flood	21.5	30	2.95 54

Ex. 94. P. 29

Dissolved Oxygen. Root River. Cross-section-Laurence Point to Stong Point, July 16, 1911.

High water occurred at Governors Island at 12.55 p.m. Low water at 7.17 a.m.

High water occurred at Nell Gate at 2.20 p.m. Low water at 8. a.m.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal current	Temp. Deg. C.	Percent water	Dissolved Oxygen per litre
		Approximate	Exact					
459	2.46	Midway between Laurence and Stong Points	Lat 40 47 48 Long 73 54 31	25	Flood	21	26	2.96
460	2.48	Midway between Laurence and Stong Points	Lat 40 47 46 Long 73 54 31	60	Flood	21	26	2.96
461	4.00	200' off E.124 St. ferry house	Lat 40 47 46 Long 73 54 31	1	Flood	22.0	20	2.96
462	4.01	200' off E.124 St. ferry house	Lat 40 47 46 Long 73 54 31	25	Flood	23	28	3.09
463	4.02	200' off E.124 St. ferry house	Lat 40 47 46 Long 73 54 31	80	Flood	23	28	3.09

Ex. 94. 1-40

July 26, 1911.

Discolored Oysters.
 Examination of Hudson River between West 4
 Street and C.R.N. of St. J. Ferry house
 Jersey City.

High water occurred at Governors Island at 1.02 p.m. Low water at 9.27 a.m.

Sample No.	Hour a.m.	Location of Sample		Tidal water rent Deg.C	Per- cent land water	Oxygen U.S. percent per satu- ration
		Approximate	Exact 0 1 2			
463	9.15	200' off Pier A	Lat 40 42 16 Long 74 01 10	1 Fbb	23 42	2.09 85
464	9.16	" " "	Lat 40 42 16 Long 74 01 10	30 Fbb	23 80	2.08 83
465	9.18	" " "	Lat 40 42 16 Long 74 01 10	40 Fbb	23 84	2.08 83
466	9.20	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 20	1 Fbb	23 42	2.09 86
467	9.21	" " "	Lat 40 42 17 Long 74 01 20	20 Fbb	23 86	2.09 86
468	9.22	" " "	Lat 40 42 17 Long 74 01 20	40 Fbb	23 26	2.09 89
469	9.45	Midstream	Lat 40 42 19 Long 74 01 24	1 Fbb	23 46	2.24 88
470	9.46	" " "	Lat 40 42 19 Long 74 01 34	20 Fbb	22 40	2.24 89
471	9.48	" " "	Lat 40 42 19 Long 74 01 34	40 Fbb	22 59	2.24 89
472	10.00	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 48	1 Fbb	23 46	2.09 89
473	10.01	" " "	Lat 40 42 21 Long 74 01 48	20 Fbb	23 40	2.24 89
474	10.05	" " "	Lat 40 42 21 Long 74 01 48	35 Fbb	22 40	2.24 89
475	10.15	200' off C.R.N. of H.J. Ferry house	Lat 40 42 22 Long 74 01 59	1 Fbb	23 48	2.09 88
476	10.16	" " "	Lat 40 42 22 Long 74 01 59	20 Fbb	22 44	2.24 89
477	10.18	" " "	Lat 40 42 22 Long 74 01 59	30 Fbb	23 44	2.24 89

Ex. 94. p. 41

Dissolved Oxygen. Hudson River Cross-section of Pier A, Manhattan July 20, 1911.
to C.R.R. of N. J. ferry house, Jersey City.
High water occurred at Governors Island at 2.53 p.m. Low water at 9.27 a.m.

Sample No.	Hour a.m.	Location of Samples		Tidal our- rent	Temp. water Deg. C	Per- cent land water	Oxygen	
		Approximate	Exact O. N.				C.C. per litre	Percent saturation
478	9.15	100' off Pier A	Lat 40 42 16 Long 74 01 09	1	23	40	2.95	53
479	9.16	" " "	Lat 40 42 16 Long 74 01 09	20	23	36	2.95	53
480	9.18	" " "	Lat 40 42 16 Long 74 01 09	40	22	36	2.95	53
481	9.23	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 20	1	23	40	3.00	54
482	9.24	" " "	Lat 40 42 17 Long 74 01 20	20	22	36	3.00	54
483	9.26	" " "	Lat 40 42 17 Long 74 01 20	40	22	36	3.00	54
484	9.33	Midstream	Lat 40 42 19 Long 74 01 34	1	23	40	3.01	54
485	9.34	" "	Lat 40 42 19 Long 74 01 34	20	22	36	3.01	54
486	9.36	" "	Lat 40 42 19 Long 74 01 34	40	22	36	3.01	54
487	9.40	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 48	1	23	40	3.10	55
488	9.41	" " "	Lat 40 42 21 Long 74 01 48	20	22	36	3.10	55
489	9.43	" " "	Lat 40 42 21 Long 74 01 48	35	22	35	3.10	55
490	9.46	100' off C.R.R. of N. J. ferry house	Lat 40 42 22 Long 74 01 59	1	23	40	3.03	54
491	9.47	" " "	Lat 40 42 22 Long 74 01 59	20	22	36	3.03	54
492	9.48	" " "	Lat 40 42 22 Long 74 01 59	30	22	36	3.03	54

Ex. 94. p.42

Dissolved Oxygen. Hudson River, Cross-section of Pier A, Manhattan to July 20, 1911.
 C. R. R. of N. J. ferry-house, Jersey City. (Continued)

Sample No.	Hour P.M.	Location of Samples		Tidal current	Temp. Deg. C	Percent water land	Oxygen per litre	Percent saturation
		Approximate	Exact					
493	12.15	100' off Pier A, N.Y.	Lat 40 42 16 Long 74 01 09	1	Flood	23	40	3.09 55
494	12.16	100' off Pier A, N.Y.	Lat 40 42 16 Long 74 01 09	20	Flood	22	26	3.09 55
495	12.18	100' off Pier A, N.Y.	Lat 40 42 16 Long 74 01 09	40	Flood	22	36	3.09 55
496	12.23	1/2 way across from Pier A	Lat 40 42 17 Long 74 01 20	1	Flood	23	40	3.14 56
497	12.24	1/2 way across from Pier A	Lat 40 42 17 Long 74 01 20	20	Flood	22	36	3.14 56
498	12.26	1/2 way across from Pier A	Lat 40 42 17 Long 74 01 20	40	Flood	22	36	3.14 56
499	12.31	Midstream	Lat 40 42 19 Long 74 01 34	1	Flood	23	40	3.15 56
500	12.32	Midstream	Lat 40 42 19 Long 74 01 34	20	Flood	22	36	3.15 56
501	12.34	Midstream	Lat 40 42 19 Long 74 01 34	40	Flood	22	36	3.15 56
502	12.39	1/2 way across from Pier A	Lat 40 42 21 Long 74 01 46	1	Flood	23	40	3.24 58
503	12.40	1/2 way across from Pier A	Lat 40 42 21 Long 74 01 46	20	Flood	22	36	3.24 58
504	12.42	1/2 way across from Pier A	Lat 40 42 21 Long 74 01 46	35	Flood	22	36	3.24 58
505	12.47	100' off C.R.R. of N.J. ferry-house	Lat 40 42 22 Long 74 01 59	1	Flood	23	40	3.17 57
506	12.48	100' off C.R.R. of N.J. ferry-house	Lat 40 42 22 Long 74 01 59	20	Flood	22	36	3.17 57
507	12.50	100' off C.R.R. of N.J. ferry-house	Lat 40 42 22 Long 74 01 59	30	Flood	22	36	3.17 57

Dissolved Oxygen. Hudson River, Cross-section of Pier A, Manhattan to July 30, 1911.
C. R. N. of N. J. ferry-house, Jersey City. (continued)

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal current	Temp. Deg. C.	Percent water land	Oxygen	
		Approximate	Exact					Per litre	Percent saturation
508	2.15	100' off Pier A, N.Y.	Lat 40 42 16 Long 74 01 09	1	Flood	23	39	3.24	58
509	2.16	100' off Pier A, N.Y.	Lat 40 42 16 Long 74 01 09	20	Flood	22	36	3.24	56
510	2.18	100' off Pier A, N.Y.	Lat 40 42 16 Long 74 01 09	40	Flood	22	36	3.24	58
511	2.22	$\frac{1}{2}$ way across from Pier A	Lat 40 42 17 Long 74 01 20	1	Flood	23	36	3.29	59
512	2.25	$\frac{1}{2}$ way across from Pier A	Lat 40 42 17 Long 74 01 20	20	Flood	22	32	3.29	59
513	2.25	$\frac{1}{2}$ way across from Pier A	Lat 40 42 17 Long 74 01 20	40	Flood	22	32	3.29	59
514	2.30	Midstream	Lat 40 42 19 Long 74 01 24	1	Flood	23	32	3.29	59
515	2.31	Midstream	Lat 40 42 19 Long 74 01 34	20	Flood	22	30	3.29	59
516	2.33	Midstream	Lat 40 42 19 Long 74 01 34	40	Flood	22	30	3.29	59
517	2.36	$\frac{1}{2}$ way across from Pier A	Lat 40 42 21 Long 74 01 48	1	Flood	23	36	3.24	58
518	2.39	$\frac{1}{2}$ way across from Pier A	Lat 40 42 21 Long 74 01 48	20	Flood	22	30	3.24	58
519	2.41	$\frac{1}{2}$ way across from Pier A	Lat 40 42 21 Long 74 01 48	35	Flood	22	30	3.24	58
520	2.46	100' off C.R.N. of N.J. ferry-house	Lat 40 42 22 Long 74 01 59	1	Flood	23	38	3.17	57
521	2.47	100' off C.R.N. of N.J. ferry-house	Lat 40 42 22 Long 74 01 59	20	Flood	22	30	3.17	57
523	2.49	100' off C.R.N. of N.J. ferry-house	Lat 40 42 22 Long 74 01 59	30	Flood	22	30	3.17	57

Dissolved Oxygen. East River; Cross-section of East River from Throgs Neck (landing west of light) to White-stone landing. July 23, 1911.

High water occurred at Governors Island at 4.08 p.m. Low water at 9.48 a.m.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. water land	Percent water	Oxygen	
		Approximate	Exact				U.S. per litre	Percent saturation
523	11.20	300' off Throgs Neck	Lat 40 48 27 Long 73 48 16	1	20	24	4.01	72
524	11.21	300' off Throgs Neck	Lat 40 48 27 Long 73 48 16	25	19.5	22	4.00	71
525	11.23	300' off Throgs Neck	Lat 40 48 27 Long 73 48 16	40	19.5	22	4.00	71
526	11.43	1 way across from Throgs Neck.	Lat 40 48 20 Long 73 48 18	1	20	24	4.01	72
527	11.44	1 way across from Throgs Neck	Lat 40 48 20 Long 73 48 18	20	19.5	22	4.00	71
528	11.46	1 way across from Throgs Neck	Lat 40 48 20 Long 73 48 18	40	19.5	22	4.00	71
529	12.20	Half-way across	Lat 40 48 09 Long 73 48 21	1	20	24	4.01	72
530	12.21	Half-way across	Lat 40 48 09 Long 73 48 21	20	19.5	22	4.00	71
531	12.23	Half-way across	Lat 40 48 09 Long 73 48 21	35	19.5	22	4.00	71
532	12.43	1 way across from Throgs Neck	Lat 40 47 58 Long 73 48 24	1	20	24	4.01	72
533	12.44	1 way across from Throgs Neck	Lat 40 47 58 Long 73 48 24	20	19.5	22	4.00	71
534	12.46	1 way across from Throgs Neck	Lat 40 47 58 Long 73 48 24	30	19.5	22	4.00	71
535	1.10	300' off Whitestone landing	Lat 40 47 50 Long 73 48 20	1	20	24	4.01	72
536	1.11	300' off Whitestone landing	Lat 40 47 50 Long 73 48 20	20	19.5	22	4.00	71
537	1.13	300' off Whitestone landing	Lat 40 47 50 Long 73 48 20	30	19.5	22	4.00	71

Ex. 94. p. 45

Dissolved Oxygen. Hudson River from mouth to Yonkers. July 25, 1911.
 High water occurred at Governors Island at 7.22 a.m. Low water at 1.47 p.m.
 High water occurred at Hell Gate at 9.20 a.m. Low water at 3.16 p.m.

Sample No.	Hour a.m.	Location of Samples	Approximate	Exact	Feet below surface	Tidal current	Temp. water	Percent land per Deg. C.	Oxygen per litre	N.C. per litre	Percent saturation
838	9.10	Midway between Pier A and C.R.N. of N.J. ferry. Jersey City	Lat 40 42 19 Long 74 01 24	1	ebb	21	28	3.00	54		
839	9.12	Midway between Pier A and C.R.N. of N.J. ferry. Jersey City	Lat 40 42 19 Long 74 01 24	40	ebb	21	28	3.00	54		
840	9.30	Midstream off W. 23 St.	Lat 40 45 09 Long 74 01 00	1	ebb	21.6	38	2.01	54		
841	9.32	Midstream off W. 23 St.	Lat 40 45 09 Long 74 01 00	40	ebb	21	28	2.80	51		
842	10.36	Midstream off W. 42 St.	Lat 40 45 50 Long 74 00 28	1	ebb	22	40	2.66	51		
843	10.37	Midstream off W. 42 St.	Lat 40 45 50 Long 74 00 28	40	ebb	21.6	36	2.66	51		
844	11.00	Midstream off W. 72 St.	Lat 40 47 02 Long 73 59 42	1	ebb	23	42	3.29	59		
845	11.02	Midstream off W. 72 St.	Lat 40 47 02 Long 73 59 42	40	ebb	22	40	3.15	56		
846	12.15	Midstream off W. 129 St.	Lat 40 49 16 Long 73 59 10	1	ebb	23.6	52	4.00	71		
847	12.17	Midstream off W. 129 St.	Lat 40 49 16 Long 73 59 10	30	ebb	23	50	3.85	69		
848	1.00 P.M.	Midstream off Ft. Washington Pt.	Lat 40 51 04 Long 73 57 15	1	ebb	22.5	64	4.24	78		
849	1.06	Midstream off Ft. Washington Pt.	Lat 40 51 04 Long 73 57 15	30	ebb	23	56	3.70	58		
850	2.15	Midstream off Spuyten Duyvil Creek	Lat 40 52 50 Long 73 56 04	1	ebb	22.5	65	4.43	79		

Dissolved Oxygen. Hudson River from mouth to Yonkers (continued) July 29, 1911

Sample No.	Hour p.m.	Approximate Location of Samples	Depth		Feet below surface	Tidal current	Temp. water, Deg. C	Percent water	Dissolved Oxygen	
			ft.	in.					U.S. per cent	by titration
501	3.15	Midstream off Spouten Bayvil Creek	Lat 40 32 30		30	33b	22	60	2.86	60
			Long 73 34 04							
502	3.00	Midstream off Mt. St. Vincent	Lat 40 34 30		1	33b	22	72	4.94	67
			Long 73 33 13							
503	2.00	Midstream off Mt. St. Vincent	Lat 40 34 30		30	33b	22.5	68	4.06	82
			Long 73 33 13							
504	2.30	Midstream off point 100' above Foor house at Northern end of Yonkers	Lat 40 37 30		1	31b	24	70	5.44	94
			Long 73 34 21							
505	3.30	Midstream off point 100' above Foor house at northern end of Yonkers	Lat 40 37 30		30	33b	22.5	72	5.39	98
			Long 73 34 21							

Sta. 36, p. 47

Be analyzed oxygen.
 High water at Governor's Island at 6.03 a.m. Low water at 8.49 p.m. High water at Hell
 Gate at 10.18 a.m. Low water at 4.14 p.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Depth fathoms	Tidal stage	Temp. air	Temp. water	Per cent water content	Gravel per cent	Sand per cent	Silt per cent	Clay per cent	Organic matter
856	10.18	Midway between Pier A and C.R.R. of N. J. Ferry, Jersey City	Lat 40 42 19 Long 74 03 34	2	ebb	22	22	22	2.14	87			
857	10.16	Midway between Pier A and C.R.R. of N. J. Ferry, Jersey City	Lat 40 42 19 Long 74 03 34	20	ebb	21.5	22	22	2.29	89			
858	10.14	Midway between Pier A and C.R.R. of N. J. Ferry, Jersey City	Lat 40 42 19 Long 74 03 34	40	ebb	21.6	22	22	2.29	89			
859	10.18	Midstream off Canal St.	Lat 40 43 20 Long 74 03 34	2	ebb	22	24	24	2.60	81			
860	10.34	Midstream off Canal St.	Lat 40 43 20 Long 74 03 34	20	ebb	21.5	22	22	2.18	87			
861	10.30	Midstream off Canal St.	Lat 40 43 20 Long 74 03 34	40	ebb	21.5	22	22	2.18	87			
862	10.58	Midstream off West 23 St.	Lat 40 48 09 Long 74 03 00	1	ebb	22	26	26	2.00	84			
863	10.54	Midstream off West 22 St.	Lat 40 48 09 Long 74 03 00	10	ebb	21.8	22	22	2.29	89			
864	10.58	Midstream off West 23 St.	Lat 40 48 09 Long 74 03 00	40	ebb	21.8	22	22	2.29	89			
865	11.20	Midstream off West 42 St.	Lat 40 48 09 Long 74 03 00	1	ebb	22	26	26	2.02	84			
866	11.01	Midstream off West 42 St.	Lat 40 48 09 Long 74 03 00	20	ebb	22	26	26	2.60	81			
867	11.25	Midstream off West 42 St.	Lat 40 48 09 Long 74 03 00	40	ebb	22	24	24	2.60	81			
868	11.00	Midstream off West 72 St.	Lat 40 47 08 Long 73 59 42	1	ebb	22	22	22	2.00	84			
869	11.01	Midstream off West 72 St.	Lat 40 47 08 Long 73 59 42	20	ebb	22	22	22	2.49	81			

Ex. 96, p. 40

Disolved Oxygen. Hudson River from mouth to Yonkers. (Continued.)
July 26, 1911.

Sample No.	Hour p.m.	Location of Samples	Tidal Temp. Per- cent		Oxygen C.C. Percent	water cent per natura- tion
			out- rent	land water		
		Approximate	Feet below surface	Exact C. F.		
570	12.03	Midstream off West 72 St.	40	38	3.43	61
		Lat 40 47 02				
		Long 73 59 42				
571	1.00	Midstream off West 110 St.	1	48	3.67	64
		Lat 40 46 32				
		Long 73 58 40				
572	1.01	Midstream off West 110 St.	20	40	3.57	64
		Lat 40 46 32				
		Long 73 58 40				
573	1.03	Midstream off West 110 St.	40	40	3.57	64
		Lat 40 46 32				
		Long 73 58 40				
574	1.20	Midstream off West 129 St.	1	52	4.00	71
		Lat 40 49 16				
		Long 73 58 10				
575	1.21	Midstream off West 129 St.	20	44	3.72	66
		Lat 40 49 16				
		Long 73 58 10				
576	1.23	Midstream off West 129 St.	30	42	3.72	66
		Lat 40 49 16				
		Long 73 58 10				
577	1.40	Midstream off West 157 St.	1	52	4.09	73
		Lat 40 50 21				
		Long 73 57 29				
578	1.41	Midstream off West 157 St.	20	44	3.70	66
		Lat 40 50 21				
		Long 73 57 29				
579	1.43	Midstream off West 157 St.	30	44	3.70	66
		Lat 40 50 21				
		Long 73 57 29				
580	2.00	Midstream off Port Washington Point	1	52	4.26	76
		Lat 40 51 04				
		Long 73 57 13				
581	2.01	Midstream off Port Washington Point	20	46	3.86	69
		Lat 40 51 04				
		Long 73 57 13				
582	2.03	Midstream off Port Washington Point	30	46	3.86	69
		Lat 40 51 04				
		Long 73 57 13				
583	2.15	Midstream off Inwood	1	56	4.24	76
		Lat 40 42 20				
		Long 73 56 04				

Dissolved Oxygen.

Hudson River from mouth to Yonkers. (Continued.)

July 26, 1911.

Sample No.	Hour p.m.	Location of Samples		Feet below surface	Tidal-Range		Per-cent water	Temp. Deg. C.	Per-cent water	Oxygen per saturation
		Approximate	Exact		Low	High				
584	2.16	Midstream off Inwood	Lat 40 52 20 Long 73 56 04	20	Ebb	25.	52	2.84	69	
585	2.18	Midstream off Inwood	Lat 40 52 20 Long 73 56 04	30	Ebb	25	52	3.84	69	
586	2.30	Midstream off Spuyten Duyvil Creek	Lat 40 52 50 Long 73 56 04	1	Ebb	23.5	58	4.26	76	
587	2.31	Midstream off Spuyten Duyvil Creek	Lat 40 52 50 Long 73 56 04	20	Ebb	23	54	3.86	69	
588	2.33	Midstream off Spuyten Duyvil Creek	Lat 40 52 50 Long 73 56 04	30	Ebb	23	54	3.86	69	
589	2.45	Midstream off Riverdale	Lat 40 54 10 Long 73 56 25	1	Ebb	24	62	4.94	88	
590	2.46	Midstream off Riverdale	Lat 40 54 10 Long 73 56 25	20	Ebb	23.5	59	4.38	78	
591	2.48	Midstream off Riverdale	Lat 40 54 10 Long 73 56 25	30	Ebb	23.5	58	4.38	78	
592	3.00	Midstream off Mt. St. Vincent	Lat 40 54 50 Long 73 55 15	1	Ebb	24	64	5.05	90	
593	3.01	Midstream off Mt. St. Vincent	Lat 40 54 50 Long 73 55 15	20	Ebb	23.5	60	4.58	82	
594	3.03	Midstream off Mt. St. Vincent	Lat 40 54 50 Long 73 55 15	30	Ebb	23.5	60	4.52	82	
595	3.15	Midstream off Power House, Yonkers	Lat 40 56 55 Long 73 54 35	1	Ebb	24	70	5.44	96	
596	3.16	Midstream off Power House, Yonkers	Lat 40 56 55 Long 73 54 35	20	Ebb	23.5	66	5.21	91	
597	3.16	Midstream off Power House, Yonkers	Lat 40 56 55 Long 73 54 35	30	Ebb	23.5	66	5.07	90	

Ex. 94, p. 50

Dissolved Oxygen.

East River Cross-section from Pier 10 Manhattan
to Pier 10, Brooklyn. July 27, 1911.

High water at Governors Island at 9.25 a.m. Low water at 3.30 p.m.

Sample No.	Hour a.m.	Location of Samples Approximate	East of surface	Feet below surface	Tidal Temp. per cent Deg.C	Per- cent saturation	
						land water	at surface
598	9.30	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	1	Flood 22	34	2.97 54
599	9.31	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	20	Flood 22	30	2.97 54
600	9.33	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	25	Flood 22	30	2.97 54
601	9.38	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	1	Flood 22	34	3.03 55
602	9.39	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	20	Flood 22	30	3.03 55
603	9.41	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	40	Flood 22	30	3.03 55
604	9.46	Midstream	Lat 40 42 03 Long 74 00 11	1	Flood 22	32	3.24 59
605	9.47	Midstream	Lat 40 42 03 Long 74 00 11	20	Flood 22	30	3.38 60
606	9.49	Midstream	Lat 40 42 03 Long 74 00 11	40	Flood 22	30	3.38 60
607	9.54	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 06	1	Flood 22	30	3.14 57
608	9.55	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 06	20	Flood 22	28	3.29 59
609	9.57	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 06	35	Flood 22	28	3.29 59
610	10.02	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	1	Flood 22	30	3.01 55
611	10.03	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	20	Flood 22	28	3.01 55

East River Cross-section from Pier 10, Manhattan to
Pier 10, Brooklyn. (Continued.) July 27, 1911.

Sample No.	Hour a.m.	Location of Samples Approximate	Exact 0' = surface	Feet below surface	Tidal current	Temp. water cent Deg. C	Per- cent Oxygen		
							land per litre of water	U.C. Percent saturation	
612	10.08	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	35	Ebb	22	28	3.01	55
613	12.00	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	1	Ebb	22	29	2.81	51
614	12.01	100 feet off Pier 10, Manhattan	Lat 40 43 09 Long 74 00 22	20	Ebb	22	29	2.81	51
615	12.05	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	25	Ebb	22	28	2.81	51
616	12.08	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	1	Ebb	22	28	2.90	53
617	12.09	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	20	Ebb	22	29	2.90	53
618	12.11	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	40	Ebb	22	29	2.90	53
619	12.16	Midstream	Lat 40 42 03 Long 74 00 11	1	Ebb	22	28	3.09	56
620	12.17	Midstream	Lat 40 42 03 Long 74 00 11	20	Ebb	22	28	3.24	59
621	12.19	Midstream	Lat 40 42 03 Long 74 00 11	40	Ebb	22	29	3.24	59
622	12.24	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 71 00 06	1	Ebb	22	28	3.00	55
623	12.25	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 71 00 06	20	Ebb	22	29	3.14	57
624	12.27	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 71 00 06	35	Ebb	22	28	3.14	57
625	12.32	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	1	Ebb	22	28	2.89	52
626	12.33	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	20	Ebb	22	28	2.89	52

Dissolved Oxygen. East River Cross-section from Pier 10, Manhattan to
Pier 10, Brooklyn. (Continued.) July 27, 1911.

Sample No.	Hour P.m.	Location of Samples	Exact 0 1 2	Feet below surface	Tidal current rent	Temp. Deg.C	Per- cent water	Oxygen	
								C.C. per land	Percent saturation
627	12.25	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	26	Ebb	22	28	2.86	52
628	2.00	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 28	1	Ebb	22	30	2.70	49
629	2.01	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 28	20	Ebb	22	30	2.70	49
630	2.03	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 28	35	Ebb	22	30	2.70	49
631	2.09	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	1	Ebb	22	30	2.76	51
632	2.09	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	20	Ebb	22	30	2.76	51
633	2.11	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	40	Ebb	22	30	2.76	51
634	2.16	Midstream	Lat 40 42 07 Long 74 00 17	1	Ebb	22	30	2.85	54
635	2.17	Midstream	Lat 40 42 07 Long 74 00 17	20	Ebb	22	30	2.85	54
636	2.19	Midstream	Lat 40 42 07 Long 74 00 17	40	Ebb	22	30	2.85	54
637	2.24	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 71 00 06	1	Ebb	22	30	2.86	52
638	2.25	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 71 00 06	20	Ebb	22	30	2.86	52
639	2.27	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 71 00 06	35	Ebb	22	30	2.86	52
640	2.32	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	1	Ebb	24	30	2.74	50
641	2.32	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	20	Ebb	22	30	2.74	50
642	2.35	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	35	Ebb	22	30	2.74	50

Ex. 94, p. 53

Discolored Oxygen. West River Cross-section from Thruge Beck to Whitestone landing. July 26, 1911.
High water at Governors Island at 10.29 a.m. Low water at 4.32 p.m. High water at Hell Gate at 12.10 p.m. Low water at 6 p.m.

Sample No.	Hour a.m.	Approximate location of samples	Depth in feet	Tidal mark	Temp. water	Per cent oxygen	Oxygen per cubic foot
643	12.00	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
644	12.01	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
645	12.02	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
646	12.03	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
647	12.04	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
648	12.05	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
649	12.06	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
650	12.07	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
651	12.08	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
652	12.09	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
653	12.10	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
654	12.11	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
655	12.12	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
656	12.13	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71
657	12.14	300 feet off west landing, Thruge Beck	Lat 40 48 57 Long 73 48 16	1 Flood	19 22	84	4.71

Dr. 34, p. 84

Buttermilk Channel, East River, July 31, 1911.
High water at Governors Island at 12.25 p.m. Low water at 6.47 p.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Depth fathoms	Tidal current	Temp. air	Temp. water	Per cent. saturation	Oxygen per liter
688	11.15	200 feet off De Graw St. Slip, Brooklyn	Lat 40 41 18 Long 74 00 22	1	Flood	22	26	2.95	54
689	11.16	200 feet off De Graw St. Slip, Brooklyn	Lat 40 41 18 Long 74 00 22	20	Flood	22	26	2.95	54
690	11.18	200 feet off De Graw St. Slip, Brooklyn	Lat 40 41 18 Long 74 00 22	26	Flood	22	26	2.95	54
691	11.25	80 feet off De Graw St. Slip, Brooklyn	Lat 40 41 18 Long 74 00 22	1	Flood	22	26	2.95	52
692	11.26	80 feet off De Graw St. Slip, Brooklyn	Lat 40 41 18 Long 74 00 22	20	Flood	22	26	2.95	58
693	11.28	80 feet off De Graw St. Slip, Brooklyn	Lat 40 41 18 Long 74 00 22	30	Flood	22	26	2.95	52
694	11.28	De Graw St. Slip, outer end	Lat 40 41 18 Long 74 00 22	1	Flood	22	26	2.95	57
695	11.28	De Graw St. Slip, outer end	Lat 40 41 18 Long 74 00 22	20	Flood	22	26	2.95	46
696	11.45	De Graw St. Slip, inner end	Lat 40 41 18 Long 74 00 22	1	Flood	22	26	2.95	26
697	11.46	De Graw St. Slip, inner end	Lat 40 41 18 Long 74 00 22	10	Flood	22	26	2.95	26
698	12.00	200 feet off Pier 29, Brooklyn	Lat 40 41 22 Long 74 00 26	1	Flood	22	26	2.95	54
699	12.01	200 feet off Pier 29, Brooklyn	Lat 40 41 22 Long 74 00 26	20	Flood	22	26	2.95	54
690	12.03	200 feet off Pier 29, Brooklyn	Lat 40 41 22 Long 74 00 26	30	Flood	22	26	2.95	54
691	12.20	200 feet off East end of Pier 30, Brooklyn	Lat 40 41 21 Long 74 00 25	1	Flood	22	26	2.95	55

Ex. 94, p. 65

10533

Buttermilk Channel, East River. (Continued.)
July 31, 1911.

Dissolved Oxygen.

Sample No.	Hour P.M.	Location of Samples Approximate	Exact " surface		Tidal Temp. per cent	Per- cent	Oxygen per saturation
			Lat. O.	Long. "	rent	water	litre
672	12.21	200 feet off East end of Pier 36, Brooklyn	Lat 40 41 11	20	Flood	22	3.00
673	12.23	200 feet off East end of Pier 36, Brooklyn	Lat 40 41 11	35	Flood	22	3.00
674	2.00	200 feet off De Graw St. Slip	Lat 40 41 15	1	Ebb	22	2.80
675	2.01	200 feet off De Graw St. Slip	Lat 40 41 15	20	Ebb	22	2.80
676	2.03	200 feet off De Graw St. Slip	Lat 40 41 15	35	Ebb	22	2.80
677	2.10	50 feet off De Graw St. Slip	Lat 40 41 14	1	Ebb	22	1.43
678	2.11	50 feet off De Graw St. Slip	Lat 40 41 14	20	Ebb	22	2.72
679	2.13	50 feet off De Graw St. Slip	Lat 40 41 14	30	Ebb	22	2.72
680	2.20	De Graw St. Slip, outer end	Lat 40 41 14	1	Ebb	22	0.59
681	2.21	De Graw St. Slip, outer end	Lat 40 41 14	20	Ebb	22	0.90
682	2.30	De Graw St. Slip, inner end	Lat 40 41 13	1	Ebb	22	0.286
683	2.31	De Graw St. Slip, inner end	Lat 40 41 13	10	Ebb	22	0.286
684	2.40	200 feet off pier 29	Lat 40 41 22	1	Ebb	22	2.80
685	2.41	200 feet off pier 29	Lat 40 41 22	20	Ebb	22	2.80

Dissolved Oxygen. Buttermilk Channel, East River. (Continued.)
July 31, 1911.

Sample No.	Hour P.M.	Location of Samples		Tidal current	Temp. water cent	per cent Deg.C	Oxygen	
		Approximate	Exact				per cent	per saturation
			Lat Long	Feet below surface				
686	2.45	200 feet off pier 29	Lat 40 41 22 Long 74 00 36	30	Ebb	28	28	2.80 51
687	3.00	200 feet off east end of pier 33	Lat 40 41 11 Long 74 00 36	1	Ebb	22	30	2.28 41
688	3.01	200 feet off east end of pier 33	Lat 40 41 11 Long 74 00 36	20	Ebb	22	28	2.72 49
689	3.03	200 feet off east end of pier 33	Lat 40 41 11 Long 74 00 36	35	Ebb	22	28	2.72 49

Ex. 94. p.57

Gomanus Canal.

Dissolved Oxygen.

High water at Governors Island at 12.25 p.m. Low water at 6.47 p.m. July 31, 1911

Sample No.	Hour p.m.	Location of Sample		Exact O. " "	Feet below surface	Tidal Temp. per-our-rem		Oxygen U.C. percent
		Approximate				deg.	land per water litre	
690	3.20	At mouth of Gomanus Canal, 25 St.	Lat 40 39 55 Long 74 00 25	1	Flood	23	30	1.77 32
691	3.31	At mouth of Gomanus Canal, 25 St.	Lat 40 39 55 Long 74 00 25	15	Flood	23	30	1.77 32
692	3.46	Hamilton Ave. bridge	Lat 40 40 17 Long 73 59 56	1	Flood	23	30	1.43 26
693	3.46	Hamilton Ave. Bridge	Lat 40 40 17 Long 73 59 56	15	Flood	23	30	1.43 26

Ex. 94. p.58

East River and Long Island Sound, August 1, 1911.
 Dissolved Oxygen.
 High water at Governors Island at 1.53 p.m. Low water at 6.57 a.m. High water at Hell Gate
 at 3.22 p.m. Low water at 8.56 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact 0' 1' "	Feet below surface	Tidal Temp. our- rent	Per- cent Deg.C	Oxygen saturation
		Approximate						
694	9.20	East River, midway between Olmsted Point and College Point	Lat 40 46 00 Long 73 51 10	1	Ebb	23	24	3.96 73
695	9.21	East River, midway between Olmsted Point and College Point	Lat 40 46 00 Long 73 51 10	20	Ebb	22	24	3.96 73
696	9.23	East River, midway between Olmsted Point and College Point	Lat 40 46 00 Long 73 51 10	40	Ebb	21.5	24	3.96 73
697	9.36	East River, midway between Throgs Neck and Willets Point	Lat 40 47 57 Long 73 47 21	1	Ebb	22	24	4.42 82
698	9.36	East River, midway between Throgs Neck and Willets Point	Lat 40 47 57 Long 73 47 21	30	Ebb	21.5	22	4.42 82
699	9.36	East River, midway between Throgs Neck and Willets Point	Lat 40 47 57 Long 73 47 21	60	Ebb	21.5	22	4.42 82
700	9.55	Long Island Sound, just north of Stepping Stones, light	Lat 40 49 35 Long 73 46 36	1	Ebb	22	22	4.71 87
701	9.56	Long Island Sound, just north of Stepping Stones, light	Lat 40 49 35 Long 73 46 36	20	Ebb	21.5	20	4.71 87
702	9.56	Long Island Sound, just north of Stepping Stones, light	Lat 40 49 35 Long 73 46 36	40	Ebb	21.5	20	4.71 87
703	10.25	Long Island Sound, just south of Execution Rocks, light	Lat 40 52 30 Long 73 44 15	1	Ebb	22	20	5.01 96
704	10.26	Long Island Sound, just south of Execution Rocks, light	Lat 40 52 30 Long 73 44 15	20	Ebb	21.5	20	5.01 96
705	10.26	Long Island Sound, just south of Execution Rocks, light	Lat 40 52 30 Long 73 44 15	35	Ebb	21.5	20	5.01 96

Ex. 94. p.59

Disolved Oxygen. Manhasset Bay, Long Island, August 3, 1913.

Low water at Port Washington at 11.30 a.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Depth in fathoms	Tidal Temp. our. water	Per cent deg. C	Per cent water	Oxygen per volume water
706	10.45	Midway between Barber Pt. and Hewlett Pt., entrance of Manhasset Bay	Lat 40 40 35 Long 73 44 45	1	80b	22	24	5.03 93
707	10.46	Midway between Barber Pt. and Hewlett Pt., entrance of Manhasset Bay	Lat 40 40 35 Long 73 44 45	18	80b	22	24	5.03 93
708	11.00	Manhasset Bay, by buoy 1 off Plum Pt.	Lat 40 49 45 Long 73 42 50	1	80b	22	24	5.18 94
709	11.01	Manhasset Bay, by buoy 1 off Plum Pt.	Lat 40 49 45 Long 73 42 50	10	80b	22	24	5.18 94
710	11.14	Manhasset Bay, by buoy 2 off Tom Pt.	Lat 40 49 45 Long 73 42 50	1	80b	22	24	5.18 94
711	11.16	Manhasset Bay, by buoy 3 off Tom Pt.	Lat 40 49 45 Long 73 42 50	10	80b	22	24	5.18 94
712	11.29	Manhasset Bay, at Port Washington public dock	Lat 40 49 45 Long 73 42 50	1	80b	22	24	5.02 93
713	11.30	Manhasset Bay, at Port Washington public dock	Lat 40 49 45 Long 73 42 50	7	80b	22	24	5.02 93
714	1.30	Manhasset Bay, at Port Washington public dock	Lat 40 49 45 Long 73 42 50	1	Flood	22	22	5.30 99
715	1.31	Manhasset Bay, at Port Washington public dock	Lat 40 49 45 Long 73 42 50	9	Flood	22	22	5.30 99
716	2.00	Manhasset Bay, by buoy 2 off Tom Pt.	Lat 40 49 45 Long 73 42 50	1	Flood	22	22	5.44 100
717	2.01	Manhasset Bay, by buoy 3 off Tom Pt.	Lat 40 49 45 Long 73 42 50	10	Flood	22	22	5.44 100
718	2.20	Manhasset Bay, by buoy 1 off Plum Pt.	Lat 40 49 45 Long 73 42 50	1	Flood	22	22	5.44 100
719	2.31	Manhasset Bay, by buoy 1 off Plum Pt.	Lat 40 49 45 Long 73 42 50	10	Flood	22	22	5.44 100
720	2.40	Midway between Barber Pt. and Hewlett Pt., entrance of bay	Lat 40 40 35 Long 73 44 45	1	Flood	22	22	5.44 100
721	2.51	Midway between Barber Pt. and Hewlett Pt., entrance of bay	Lat 40 40 35 Long 73 44 45	18	Flood	22	22	5.44 100

Ex. 94. p. 60

Long Island Sound and East River, August 1, 1911.

In enclosed Oxygen.

Sample No.	Hour P.m.	Location of Sample	Approximate	Depth fathoms	Fathoms below surface	Fathoms out- runt	Temp. deg- C	Per- cent water	Per- cent O ₂	Per- cent O ₂ per saturation
722	5.20	Long Island Sound, West south of Lat	Long 73 44 30	1	Flood	21.8	18	5.44	100	
723	5.21	Long Island Sound, West south of Lat	Long 73 44 30	80	Flood	21.8	18	5.44	100	
724	5.25	Long Island Sound, West south of Lat	Long 73 44 30	58	Flood	21.8	18	5.44	100	
725	4.00	Long Island Sound, West south of Lat	Long 73 44 30	1	Flood	21.8	18	5.05	94	
726	4.01	Long Island Sound, West south of Lat	Long 73 44 30	80	Flood	21.8	18	5.05	94	
727	4.05	Long Island Sound, West south of Lat	Long 73 44 30	40	Flood	21.8	18	5.05	94	
728	4.80	East River, midway between	Long 73 47 21	1	Flood	22	18	4.86	90	
729	4.81	East River, midway between	Long 73 47 21	80	Flood	21.8	18	4.86	90	
730	4.85	East River, midway between	Long 73 47 21	60	Flood	21.8	18	4.86	90	
731	5.15	East River, midway between	Long 73 47 21	1	Flood	22	20	4.59	89	
732	5.16	East River, midway between	Long 73 47 21	80	Flood	21.8	18	4.86	88	
733	5.17	East River, midway between	Long 73 47 21	40	Flood	21.8	18	4.86	88	
734	5.18	East River, midway between	Long 73 47 21	60	Flood	21.8	18	4.86	88	

Dissolved Oxygen.

Lower New York Bay. August 2, 1911.

High water at Governors Island at 1.32 p.m. Low water at 7.16 a.m. High water Sandy Hook at 12.54 p.m. Low water at 6.32 a.m.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water cent Deg.C	Per cent water	Oxygen	
		Approximate	Exact					C.C. percent	per saturation
734	10.05	Midway between South Beach, S.I. and Hoffman Island	Lat 40 25 00 Long 74 03 35	1	Flood	21.5	20	5.44	100
735	10.06	Midway between South Beach, S.I. and Hoffman Island	Lat 40 25 00 Long 74 03 35	15	Flood	21.5	20	5.44	100
736	10.25	Midway between Midland Beach and Swinburne Island	Lat 40 34 20 Long 74 03 50	1	Flood	21.6	20	5.44	100
737	10.26	Midway between Midland Beach and Swinburne Island	Lat 40 34 20 Long 74 03 50	15	Flood	21.5	18	5.44	100
738	10.45	1 mile off Elm Tree beacon on line with West Bank light	Lat 40 23 20 Long 74 04 45	1	Flood	21.5	18	5.44	100
739	10.46	1 mile off Elm Tree beacon on line with West Bank light	Lat 40 23 20 Long 74 04 45	15	Flood	21.5	18	5.44	100
740	12.05	By nun buoy 2, west of Old Orchard light	Lat 40 20 55 Long 74 07 00	1	Flood	21.5	18	5.44	100
741	10.06	By nun buoy 2, west of Old Orchard light	Lat 40 20 55 Long 74 07 00	15	Flood	21.5	18	5.44	100

Ex. 94. p.62

Dissolved Oxygen.

Raritan Bay.

August 2, 1911.

Sample No.	Hour	Location of Samples		Feet below surface	Tidal current	Temp. water	Per cent	Oxygen	
		Approximate	Exact					U.C. per litre	Percent saturation
742	12.20	By spar buoy 4 off Seguin Point	Lat 40 30 35 Long 74 09 10	1	Flood	21.5	18	5.44	100
743	12.21	By spar buoy 4 off Seguin Point	Lat 40 30 35 Long 74 09 10	15	Flood	21.5	19	5.44	100
744	12.25	By spar buoy 4 1/2 off Seguin Point	Lat 40 30 15 Long 74 10 05	1	Flood	21.5	18	5.44	100
745	12.36	By spar buoy 4 1/2 off Seguin Point	Lat 40 30 15 Long 74 10 05	15	Flood	21.5	18	5.44	100
746	12.50	By spar buoy 5 off Seguin Point	Lat 40 30 50 Long 74 11 50	1	Flood	21.5	20	5.44	100
747	12.51	By spar buoy 5 off Seguin Point	Lat 40 30 50 Long 74 11 50	15	Flood	21.5	20	5.44	100
748	1.05	By can buoy 5 off Princess bay	Lat 40 30 20 Long 74 12 20	1	Flood	22	22	5.44	100
749	1.06	By can buoy 5 off Princess bay	Lat 40 30 20 Long 74 12 20	15	Flood	22	22	5.44	100
750	1.20	By nun buoy 6 farther west	Lat 40 29 45 Long 74 13 35	1	Flood	22	22	5.44	100
751	1.21	By nun buoy 6 farther west	Lat 40 29 45 Long 74 13 35	15	Flood	22	22	5.44	100
752	1.35	By buoy 8 off Great beds light	Lat 40 29 05 Long 74 14 30	1	Flood	22	22	5.44	100
753	1.36	By buoy 8 off Great beds light	Lat 40 29 05 Long 74 14 20	15	Flood	22	22	5.44	100

Ex. 94, p. 63

Disolved Oxygen. Cheesquake Creek, New Jersey. August 2, 1911.

Sample No.	Hour P.M.	Location of Samples		Exact 0° 1' 2' surface	Tidal out- rent	Temp. water Deg. C	Per- cent land water	Oxygen	
		Approximate	Feet below surface					C.C. per litre	Percent saturation
754	1.50	1 mile off Cheesquake creek, in Raritan bay	Lat 40 26 38 Long 74 15 08	1	Flood	22	22	5.44	100
755	1.51	1 mile off Cheesquake creek, in Raritan bay	Lat 40 28 58 Long 74 15 08	7	Flood	22	22	5.44	100
756	2.02	Cheesquake Creek at mouth	Lat 40 27 50 Long 74 15 30	1	Flood	22	22	5.45	100
757	2.03	Cheesquake creek at mouth	Lat 40 27 50 Long 74 15 30	6	Flood	22	22	5.45	100
758	2.02	Cheesquake creek at mouth	Lat 40 27 50 Long 74 15 30	1	Flood	22	22	5.44	100
759	2.03	Cheesquake creek at mouth	Lat 40 27 50 Long 74 15 30	6	Flood	22	22	5.44	100
760	2.25	Cheesquake creek, just below drawbridge	Lat 40 27 48 Long 74 15 40	1	Flood	22	26	5.45	100
761	2.26	Cheesquake creek, just below drawbridge	Lat 40 27 45 Long 74 15 40	6	Flood	22	25	5.45	100
762	2.25	Cheesquake creek, just below drawbridge	Lat 40 27 45 Long 74 15 40	1	Flood	22	26	5.44	100
763	2.26	Cheesquake creek, just below drawbridge	Lat 40 27 45 Long 74 15 40	6	Flood	22	26	5.44	100

Ex. 94, p. 64

Maritan Bay. August 2, 1911.

Dissolved Oxygen.

Sample No.	Hour p.m.	Location of Samples Approximate	Depth of water	Feet below surface	Tidal current rent	Temp. of water Deg. C	Per cent saturation	Oxygen per litre
764	2.48	Maritan bay, just north of Great Bed light	Lat 40 29 15 Long 74 15 10	1	Flood	22	22	5.45
765	2.49	Maritan bay, just north of Great Bed light	Lat 40 29 15 Long 74 15 10	15	Flood	22	22	5.48
766	3.00	By red and black buoy at entrance of Arthur Kill	Lat 40 30 15 Long 74 15 28	1	Flood	22	22	5.44
767	3.01	By red and black buoy at entrance of Arthur Kill	Lat 40 30 15 Long 74 15 28	15	Flood	22	22	5.44

Ex. 94. p. 68

Dissolved Oxygen. East River Cross-section between Pier 10, Manhattan
and Pier 10, Brooklyn. August 3, 1911.
High water at Governors Island at 3.13 p.m. Low water at 9.07 a.m.

Sample No.	Hour a.m.	Location of Sample	Exact 0	Feet Below surface	Tidal Temp. Per- cent		Oxygen per litre	
					Sur- face	cent deg. C	per cent	litre
768	9.10	100 feet off pier 10, Manhattan	Lat 40 42 09	1	Ebb	22	28	2.70
769	9.11	100 feet off pier 10, Manhattan	Long 74 00 22	20	Ebb	22	26	2.97
770	9.12	100 feet off pier 10, Manhattan	Lat 40 42 09	30	Ebb	22	26	2.97
771	9.13	1/4 way across from pier 10, Manhattan	Long 74 00 22	1	Ebb	22	26	2.76
772	9.19	1/4 way across from pier 10, Manhattan	Lat 40 42 07	20	Ebb	22	26	3.03
773	9.21	1/4 way across from pier 10, Manhattan	Long 74 00 17	40	Ebb	22	26	3.02
774	9.24	Midstream	Lat 40 42 05	1	Ebb	22	28	2.93
775	9.27	Midstream	Long 74 00 11	20	Ebb	22	26	3.02
776	9.29	Midstream	Lat 40 42 03	40	Ebb	22	26	3.09
777	9.34	3/4 way across from pier 10, Manhattan	Long 74 00 11	1	Ebb	22	28	2.86
778	9.35	3/4 way across from pier 10, Manhattan	Lat 40 42 00	20	Ebb	22	26	3.00
779	9.37	3/4 way across from pier 10, Manhattan	Long 74 00 06	28	Ebb	22	26	2.00
780	9.42	100 feet off pier 10, Brooklyn	Lat 40 41 57	1	Ebb	22	28	2.74

Mixed bed oxygen.

East River cross-section between pier 10, Manhattan and pier 40, Brooklyn. (Continued.) August 3, 1923.

Sample No.	Hour a.m.	Location of Sample Approximate	Depth ft.	Feet below surface	Tidal Stage Feet above low water	Temp. F.	Per- cent oxygen	Percent oxygen per volume water at 32° F.
781	9.45	100 feet off pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	20	Ebb	22	26	2.50
782	9.45	100 feet off pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	25	Ebb	22	26	2.50
783	11.55	100 feet off pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	1	Flood	23	26	2.97
784	11.56	100 feet off pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	20	Flood	22	26	2.97
785	11.58	100 feet off pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	30	Flood	22	26	2.97
786	12.05	2/4 way across from pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	1	Flood	22	26	2.08
787	12.06	2/4 way across from pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	20	Flood	22	26	2.03
788	12.06	2/4 way across from pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	40	Flood	22	26	2.03
789	12.11	Midstream	Lat 40 42 06 Long 74 00 11	1	Flood	23	26	2.09
790	12.12	Midstream	Lat 40 42 06 Long 74 00 11	20	Flood	22	26	2.09
791	12.14	Midstream	Lat 40 42 06 Long 74 00 11	40	Flood	22	26	2.09
792	12.18	5/4 way across from pier 10, Manhattan	Lat 40 42 00 Long 71 00 04	1	Flood	23	26	3.00
793	12.20	5/4 way across from pier 10, Manhattan	Lat 40 42 00 Long 71 00 04	20	Flood	22	26	3.00
794	12.22	5/4 way across from pier 10, Manhattan	Lat 40 42 00 Long 71 00 04	35	Flood	22	26	3.00
795	12.27	100 feet off pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	1	Flood	23	26	2.74

Ex. 34, p. 67

Dissolved Oxygen. East River-In slips and outside. Aug. 4, 1911
 High water occurred at Governors Island at 4.25 a.m. Low water at 9.58 a.m.
 High water occurred at Hell Gate at 5.58 p.m. Low water at 11.38 a.m.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. water	Percent land water	O.C. per litre	Oxygen saturation
		Approximate	Exact " "					
813	10	50' off end of dock at port of E. 14 St.	Lat 40 43 36 Long 73 58 19	Ebb	23	46	0.54	10
814	10.02	50' off end of dock at port of E. 14 St.	Lat 40 43 36 Long 73 58 19	Ebb	22	30	1.89	34
815	10.15	200' off end of 14 St. dock	Lat 40 43 35 Long 73 58 18	Ebb	22	29	2.56	47
816	10.17	200' off end of 14 St. dock	Lat 40 43 35 Long 73 58 18	Ebb	22	28	2.70	49
817	10.25	Slip north of East 24 St. pier. Midway up slip.	Lat 40 44 09 Long 73 58 27	Ebb	23	28	1.32	24
818	10.26	Slip north of East 24 St. pier. Midway up slip.	Lat 40 44 09 Long 73 58 27	Ebb	22	28	1.89	34
819	10.40	Inner end of slip	Lat 40 44 11 Long 73 58 30	Ebb	23	28	1.10	20
820	10.41	Inner end of slip	Lat 40 44 11 Long 73 58 30	Ebb	23	28	1.65	30
821	10.50	200' off outer end of E. 24 St. slip	Lat 40 44 07 Long 73 58 20	Ebb	22	28	2.66	52
822	10.51	200' off outer end of E. 24 St. slip	Lat 40 44 07 Long 73 58 20	Ebb	22	29	2.66	52
823	11.06	Slip between E. 45 and E. 46 St. 20' from inside of slip	Lat 40 45 01 Long 73 58 01	Ebb	23	36	1.18	21
824	11.08	Slip between E. 45 and E. 46 St. 20' from inside of slip	Lat 40 45 01 Long 73 58 01	Ebb	22	30	1.77	32
825	11.28	200' off outer end of 46 St. slip	Lat 40 45 00 Long 73 57 59	Ebb	22	28	2.70	49

Dissolved Oxygen

East River in slips and outside

(Continued)

August 4, 1911

Sample No	Hour a.m.	Location of Samples		Exact O ' " surface	Feet current below surface	Tidal current	Temp. water Deg.C	Percent Oxygen	
		Approximate						land water	C.C. Percent saturation litre tition
826	11.29	200 feet off outer end of 45th St slip	Lat 40 45 00 Long 73 57 58	25	Ebb	22	28	2.81	51
827	11.50	300 feet off foot of East 50th St	Lat 40 45 10 Long 73 57 50	1	Ebb	22	28	2.86	52
828	11.51	200 feet off foot of East 50th St.	Lat 40 45 10 Long 73 57 50	25	Ebb	22	28	2.86	52

Ex. 94. p.70

Dissolved Oxygen.

Harlem River

August 4, 1911

Low water in Harlem River at 12.15 P. M.

Sample No.	Hour p.m.	Location of Samples	Approximate	Exact	Feet below surface	Tidal current	Temp. water Deg C	Percent land water	Oxygen per litre	F.C. percent saturation
829	12.10	Half way up slip between 108th and 109th St		Lat 40 47 24 Long 73 56 11	1 Ebb		23	44	0.44	8
830	12.11	Half way up slip between 108th and 109th St		Lat 40 47 24 Long 73 56 11	10 Ebb		22	30	0.88	16
831	12.30	Slip between 108th and 109th St		Lat 40 47 24 Long 73 56 11	1 Flood		23	42	0.89	11
832	12.31	Slip between 108th and 109th St		Lat 40 47 24 Long 73 56 11	10 Flood		22	30	1.18	21
833	1.00	30 feet off end of East 109th St Pier		Lat 40 47 25 Long 73 56 12	1 Flood		23	44	1.00	18
834	1.01	30 feet off end of East 109th St Pier		Lat 40 47 25 Long 73 56 12	15 Flood		22	30	1.43	26
835	1.06	Midstream		Lat 40 47 23 Long 73 56 07	1 Flood		23	44	2.03	19
836	1.07	Midstream		Lat 40 47 23 Long 73 56 07	20 Flood		22	30	1.47	37
837	1.11	30 feet off end of Ward's Is dock		Lat 40 47 20 Long 73 56 02	1 Flood		23	42	1.10	30
838	1.12	30 feet off end of Ward's Is dock		Lat 40 47 20 Long 73 56 02	15 Flood		22	30	1.80	27
839	2.00	Midstream off East 109th St.		Lat 40 47 23 Long 73 56 07	1 Flood		22	32	1.24	23
840	2.01	Midstream off East 109th St.		Lat 40 47 23 Long 73 56 07	20 Flood		22	32	1.24	23

Ex. 94. p.71

Dissolved Oxygen Kill van Kull August 6, 1911.
High water occurred at Governors Island at 7.08 a. m. Low water at 1.17 p.m.

Sample No.	Hour a.m.	Location of Samples	Approximate	Knots	Feet below surface	Tidal current	Temp. water	Percent water land	Oxygen per saturation
841	10.50	Upper bay-by Robbin's Reef buoy	Lat 40 39 15 Long 74 05 50	1	Ebb	25	28	3.68	64
842	10.51	Upper bay-by Robbin's Reef bell	Lat 40 39 15 Long 74 05 50	20	Ebb	25	28	3.68	70
843	10.55	Upper bay-by Robbin's Reef bell	Lat 40 39 15 Long 74 05 50	40	Ebb	25	28	3.68	70
844	11.06	Kill van Kull-off Jersey St., New Brighton midstream	Lat 40 38 57 Long 74 05 25	1	Ebb	25	32	3.72	68
845	11.06	Kill van Kull-off Jersey St., New Brighton, midstream	Lat 40 38 57 Long 74 05 25	20	Ebb	25	30	3.72	58
846	11.08	Kill van Kull-off Jersey St., New Brighton, midstream	Lat 40 38 57 Long 74 05 25	40	Ebb	25	30	3.72	58
847	11.20	Off Sailors Snug Harbor-midstream	Lat 40 36 50 Long 74 06 07	1	Ebb	25	34	3.67	65
848	11.21	Off Sailors Snug Harbor-midstream	Lat 40 36 50 Long 74 06 07	20	Ebb	25	32	3.67	65
849	11.23	Off Sailors Snug Harbor-midstream	Lat 40 36 50 Long 74 06 07	35	Ebb	25	32	3.57	65
850	11.25	Off Port Richmond ferry-midstream	Lat 40 28 35 Long 74 07 52	1	Ebb	25	34	3.83	70
851	11.26	Off Port Richmond ferry-midstream	Lat 40 28 35 Long 74 07 52	20	Ebb	25	32	3.83	70
852	11.28	Off Port Richmond ferry-midstream	Lat 40 28 35 Long 74 07 52	40	Ebb	25	32	3.83	70
853	11.45	By buoy 22 near west end of Kill	Lat 40 33 35 Long 74 08 24	1	Ebb	25	34	4.00	73
854	11.46	By buoy 22 near west end of Kill	Lat 40 33 35 Long 74 08 24	20	Ebb	25	32	4.00	73
855	11.48	By buoy 22 near west end of Kill	Lat 40 33 35 Long 74 08 24	40	Ebb	25	32	4.00	73

Ex. 94. p. 72

Dissolved Oxygen. Newark Bay. Aug. 8, 1911.
 Low water at Governors Island at 1.17 p.m. Low water at Newark at 2.00 P.M.

Sample No.	Hour P.M.	Location of Samples		Tidal Current	Temp. water	Percent land water	Oxygen	
		Approximate	Exact				C.C. per litre	Percent saturation
			Feet below surface					
856	12.00	200' west of Bergen Pt.	Lat 40 38 35 Long 74 08 59	1 Ebb	23	34	4.09	74
857	12.08	200' west of Bergen Pt.	Lat 40 38 35 Long 74 08 59	20 Ebb	23	32	4.09	74
858	12.20	At 1st Drawbridge	Lat 40 39 17 Long 74 08 46	1 Ebb	23.5	36	4.43	82
859	12.21	At 1st Drawbridge	Lat 40 39 17 Long 74 08 46	20 Ebb	23	34	4.43	81
860	12.40	By bell buoy 2 above 1st Drawbridge	Lat 40 40 12 Long 74 08 06	1 Ebb	23.5	46	4.86	76
861	12.41	By bell buoy 2 above 1st Drawbridge	Lat 40 40 12 Long 74 08 06	20 Ebb	23.5	46	4.26	76
862	1.00	By nun buoy 4 below 2nd Drawbridge	Lat 40 41 38 Long 74 07 35	1 Ebb	23.5	46	3.03	84
863	1.01	By nun buoy 4 below 2nd Drawbridge	Lat 40 41 38 Long 74 07 35	8 Ebb	23.5	46	3.03	84
864	1.10	At 2nd Drawbridge	Lat 40 41 56 Long 74 07 12	1 Ebb	24	60	1.92	84
865	1.11	At 2nd Drawbridge	Lat 40 41 56 Long 74 07 12	10 Ebb	24	60	1.92	84
866	1.20	By nun buoy just below mouth of Passaic River	Lat 40 42 28 Long 74 07 12	1 Ebb	24.5	68	1.36	84
867	1.21	By nun buoy just below mouth of Passaic River	Lat 40 42 28 Long 74 07 12	15 Ebb	24.5	64	1.25	84

Ex. 94. p.73

August 26th, 1913

Pennsile River

Dissolved Oxygen

Low water at Newark at 8 P. M.

Sample No.	Hour P.M.	Location of Sample	Exact	Feet below surface	Tidal current	Temp. water	Percent water land	Oxygen cc. per liter	Percent saturation
866	1.50	At G.E.S. of N.J. drawbridge just above mouth of Pennsile River	Lat 40 48 21 Long 74 07 18	1	ebb	26	82	0	0
868	1.51	At G.E.S. of N.J. drawbridge just above mouth of Pennsile River	Lat 40 48 21 Long 74 07 18	1.5	ebb	26	80	0	0
870	1.40	At Plank Road drawbridge	Lat 40 43 58 Long 74 07 06	1	ebb	26	88	0	0
871	1.43	At Plank Road drawbridge	Lat 40 43 58 Long 74 07 06	1.5	ebb	26.6	80	0	0
872	1.50	At Penn.N.J. Freight bridge just below Newark	Lat 40 44 06 Long 74 09 48	1	ebb	26	94	0	0
873	1.51	At Penn.N.J. Freight bridge just below Newark	Lat 40 44 06 Long 74 09 48	1.5	ebb	26	94	0	0
874	2.00	At Penn.N.J. passenger bridge at Newark	Lat 40 44 49 Long 74 09 56	1	ebb	26	94	0	0
876	2.02	At Penn.N.J. passenger bridge at Newark	Lat 40 44 49 Long 74 09 56	1.5	ebb	26	94	0	0

IN. 94. P. 74

Micro-aerated Oxygen. The Narrows Cross-section between Fort Madsenoth, 2. 1. and Fort Lafayette. August 9, 1911.
High water at Governors Island at 7.45 a.m. Low water at 8.07 p.m.

Sample No.	Hour a.m.	Location of Sample		Depth fathoms	Feet below surface	Tidal Temp. per-our- water out		Oxygen per litre
		Approximate				Reg-C	per cent	
876	9.40	800 feet off Fort Madsenoth	Lat 40 36 22	1	Ebb	22	20	4.00
			Long 74 02 08					
877	9.42	500 feet off Fort Madsenoth	Lat 40 36 22	40	Ebb	22	20	4.20
			Long 74 02 08					
878	9.44	800 feet off Fort Madsenoth	Lat 40 36 22	76	Ebb	22	22	4.26
			Long 74 02 08					
879	9.46	Midway between forts	Lat 40 36 22	1	Ebb	22	20	4.09
			Long 74 02 48					
880	9.48	Midway between forts	Lat 40 36 22	40	Ebb	22	22	4.20
			Long 74 02 48					
881	9.50	Midway between forts	Lat 40 36 22	76	Ebb	22	22	4.20
			Long 74 02 48					
882	10.00	800 feet off Fort Lafayette	Lat 40 36 22	1	Ebb	22	20	4.12
			Long 74 02 48					
883	10.02	800 feet off Fort Lafayette	Lat 40 36 22	40	Ebb	22	22	4.42
			Long 74 02 48					
884	10.04	800 feet off Fort Lafayette	Lat 40 36 22	76	Ebb	22	21	4.42
			Long 74 02 48					
885	11.40	800 feet off Fort Madsenoth	Lat 40 36 22	1	Ebb	22	20	2.42
			Long 74 02 08					
886	11.42	800 feet off Fort Madsenoth	Lat 40 36 22	40	Ebb	22	22	2.72
			Long 74 02 08					
887	11.44	800 feet off Fort Madsenoth	Lat 40 36 22	76	Ebb	22	22	2.72
			Long 74 02 08					
888	12.00	Midway between forts	Lat 40 36 22	1	Ebb	22	20	2.87
			Long 74 02 48					
889	12.02	Midway between forts	Lat 40 36 22	40	Ebb	22	24	2.70
			Long 74 02 48					

Dissolved Oxygen.

The Marrows Cross-section between Fort Wadsworth,
S. I. and Port Lafayette. (Continued.) August 9, 1911.

Sample No.	Hour P.M.	Location of Samples		Tidal cur- rent	Temp. Deg.C	per- cent land water	Oxygen	
		Approximate	Exact O	feet below surface			C.O. per litre	Percent saturation
890	12.04	Midway between forts	Lat 40 36 25 Long 74 02 48	75	Ebb	22	24	3.70
891	12.10	500 feet off Fort Lafayette	Lat 40 36 28 Long 74 02 27	1	Ebb	23	28	3.53
892	12.12	500 feet off Fort Lafayette	Lat 40 36 28 Long 74 02 27	40	Ebb	22	24	3.63
893	12.14	500 feet off Fort Lafayette	Lat 40 36 28 Long 74 02 27	75	Ebb	22	24	3.63
894	1.10	500 feet off Fort Wadsworth	Lat 40 36 22 Long 74 03 08	1	Ebb	23.5	28	3.43
895	1.12	500 feet off Fort Wadsworth	Lat 40 36 22 Long 74 03 08	40	Ebb	23	24	3.72
896	1.14	500 feet off Fort Wadsworth	Lat 40 36 22 Long 74 03 08	75	Ebb	23	24	3.72
897	1.20	Midway between forts	Lat 40 36 25 Long 74 02 48	1	Ebb	23.5	28	3.57
898	1.22	Midway between forts	Lat 40 36 25 Long 74 02 48	40	Ebb	23	24	3.70
899	1.24	Midway between forts	Lat 40 36 25 Long 74 02 48	75	Ebb	23	24	2.70
900	1.30	500 feet off Fort Lafayette	Lat 40 36 28 Long 74 02 27	1	Ebb	22.5	28	3.53
901	1.32	500 feet off Fort Lafayette	Lat 40 36 28 Long 74 02 27	40	Ebb	23	24	3.68
902	1.34	500 feet off Fort Lafayette	Lat 40 36 29 Long 74 02 27	75	Ebb	23	24	3.60

Ex. 94, p. 76

Dissolved Oxygen.

Hudson River Cross-section from Pier A, Manhattan to
C. R. R. of N. J. ferry, Jersey City. (Continued.)

August 10, 1911.

Sample No.	Hour a.m.	Location of Samples		Tidal cur- rent	Temp. Deg. C	Per- cent land water	Oxygen	
		Approximate	Braut " surface				U. S. Percent	saturation
916	9.38	100 feet off C. R. R. of N. J. ferry	Lat 40 42 22 Long 74 01 59	20 Flood	22	30	3.15	57
917	9.40	100 feet off C. R. R. of N. J. ferry	Lat 40 42 22 Long 74 01 59	28 Flood	22	30	3.15	57
918	11.10	100 feet off Pier A	Lat 40 42 16 Long 74 01 09	1 Ebb	23	34	2.70	49
919	11.11	100 feet off Pier A	Lat 40 42 16 Long 74 01 09	20 Ebb	22	32	2.61	51
920	11.13	100 feet off Pier A	Lat 40 42 16 Long 74 01 09	40 Ebb	22	32	2.61	51
921	11.17	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 20	1 Ebb	23	34	2.90	53
922	11.18	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 20	20 Ebb	22	32	2.90	53
923	11.20	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 20	40 Ebb	22	32	2.90	53
924	11.24	Midstream	Lat 40 42 19 Long 74 01 34	1 Ebb	23	34	2.95	55
925	11.25	Midstream	Lat 40 42 19 Long 74 01 34	20 Ebb	22	32	2.95	55
926	11.27	Midstream	Lat 40 42 19 Long 74 01 34	40 Ebb	22	32	2.95	55
927	11.30	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 48	1 Ebb	23	34	2.86	52
928	11.31	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 48	20 Ebb	22	32	3.00	55
929	11.35	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 48	35 Ebb	22	32	3.00	55

Ex. 94, p. 79

Dissolved Oxygen

Hudson River Cross-section from Pier A, Manhattan
to C. R. R. of N. J. ferry, Jersey City. (Continued.)
August 10, 1911.

Sample No.	Hour a.m.	Location of Sample		Feet below surface	Tidal Temp. Per- cent		Oxygen per saturation
		Approximate	Exact		our- water sent Deg. C	water	
930	11.37	100 feet off C. R. R. of N. J. ferry	Lat 40 42 22 Long 74 01 59	1	56b 25	34	2.74 90
931	11.38	100 feet off C. R. R. of N. J. ferry	Lat 40 42 22 Long 74 01 59	20	56b 22	32	2.83 82
932	11.40	100 feet off C. R. R. of N. J. ferry	Lat 40 42 22 Long 74 01 59	28	56b 22	32	2.89 82
933	1.30	100 feet off Pier A	Lat 40 42 26 Long 74 01 59	1	56b 23	35	2.70 49
934	1.31	100 feet off Pier A	Lat 40 42 26 Long 74 01 59	20	56b 22	32	2.61 51
935	1.35	100 feet off Pier A	Lat 40 42 26 Long 74 01 59	40	56b 22	32	2.61 51
936	1.37	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 50	1	56b 23	36	2.76 50
937	1.39	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 50	20	56b 22	32	2.90 53
938	1.40	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 50	40	56b 22	32	2.90 53
939	1.44	Midstream	Lat 40 42 19 Long 74 01 34	1	56b 23	36	2.60 91
940	1.45	Midstream	Lat 40 42 19 Long 74 01 34	20	56b 22	32	2.38 89
941	1.47	Midstream	Lat 40 42 19 Long 74 01 34	40	56b 22	32	2.96 96
942	1.50	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 40	1	56b 23	36	2.72 90
943	1.51	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 40	20	56b 22	32	2.66 92

Dissolved Oxygen.

Hudson River Cross-section from Pier A, Manhattan
to C. R. N. of N. J. ferry, Jersey City. (Continued.)
August 10, 1911.

Sample No.	Hour p.m.	Location of Samples		Exact O.	Per cent below surface	Tidal Temp. our- rent	Per- cent Deg.C	Oxygen per litre	Percent saturation
		Approximate							
944	1.51	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 48	36	22	22	22	2.86	82
945	1.57	100 feet off C. R. N. of N. J. ferry	Lat 40 42 22 Long 74 01 59	1	23	23	23	2.60	47
946	1.58	" " " "	Lat 40 42 22 Long 74 01 59	20	22	22	22	2.74	80
947	2.00	" " " "	Lat 40 42 22 Long 74 01 59	28	22	22	22	2.74	80

Ex. 94. p. 80

Shoalwater Bay, Governor Canal. August 10, 1911.
High water at Governor Island at 8.25 a.m. Low water at 8.27 p.m.

Sample No.	Hour	Approximate location of Sample	Depth of Sample		Feet below surface	Tidal Temp. surface	Tidal Temp. at 100 ft	Per-centage of water	C.T. per cubic foot	Oxygen per liter
			Lat	Long						
948	8.28	At Hamilton Ave. bridge	Lat 40 40 17	Long 73 59 56	1	80.5	80.5	80	6.01	15
949	8.26	At Hamilton Ave. bridge	Lat 40 40 17	Long 73 59 56	10	80.5	80	80	1.22	24
950	8.45	At mouth, 28 St. Brooklyn	Lat 40 39 55	Long 74 00 25	1	80.5	80.5	80	2.29	42
951	8.46	At mouth, 28 St. Brooklyn	Lat 40 39 55	Long 74 00 25	10	80.5	80	80	2.29	48

Dr. 04. p.01

Courses from New York to New London, Conn.,
 by Long Island Sound. August 27, 1911.

High water occurred at Governors Island, N.Y., at 22.30 P.M. Samples collected and tests
 made on boat Quaker II.

Dissolved Oxygen.

Sample No.	Hour a.m.	Location of Sample	Approximate	Depth in fathoms	Tidal rise or fall	Temp. air-water diff. deg. C	Per cent oxygen in water	Oxygen per litre		
982	5.00	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	1	23b	22	20	2.95	21
983	5.01	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	20	23b	22	20	2.95	21
984	5.03	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	40	23b	22	20	2.95	21
985	5.00	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	3	23b	22	20	2.95	21
986	5.01	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	20	23b	22	20	2.95	21
987	5.03	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	40	23b	22	20	2.95	21
988	5.40	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	1	23b	22	20	2.95	21
989	5.41	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	20	23b	22	20	2.95	21
990	5.43	East River midstream, off East 42 St., N.Y.	Lat 40 44 47	Long 73 57 40	40	23b	22	20	2.95	21
991	7.15	Long Island Sound just north of Steppingstones Lighthouse	Lat 40 49 26	Long 73 47 26	3	23b	22	20	2.95	21
992	7.16	Long Island Sound just north of Steppingstones Lighthouse	Lat 40 49 26	Long 73 47 26	20	23b	22	20	2.95	21
993	7.17	Long Island Sound just north of Steppingstones Lighthouse	Lat 40 49 26	Long 73 47 26	40	23b	22	20	2.95	21

Dissolved Oxygen.

Course from New York to New London, Conn., by
Long Island Sound. (Continued.) August 17, 1911.

Sample No.	Hour a.m.	Location of Samples Approximate	Exact G. S.	Feet below surface	Tidal cur- rent	Temp. Deg. C.	Per- cent land water	Oxygen per litre	Percent saturation
964	7.45	Long Island Sound, just south of Execution Rocks lighthouse	Lat 40 52 30 Long 73 44 15	1	2bb	22	20	5.22	97
965	7.46	Long Island Sound, just south of Execution Rocks lighthouse	Lat 40 52 30 Long 73 44 15	20	2bb	21.5	20	5.22	97
966	7.48	Long Island Sound, just south of Execution Rocks lighthouse	Lat 40 52 30 Long 73 44 15	35	2bb	21.5	20	5.22	97
967	8.20	Long Island Sound, 1 mile north of Matinecock Point, L. I.	Lat 40 54 55 Long 73 36 10	1	2bb	22	20	5.40	100
968	8.21	Long Island Sound, 1 mile north of Matinecock Point, L. I.	Lat 40 54 56 Long 73 36 10	25	2bb	21.5	20	5.40	100
969	8.22	Long Island Sound, 1 mile north of Matinecock Point, L. I.	Lat 40 54 58 Long 73 36 10	50	2bb	21.5	20	5.40	100
970	9.20	Long Island Sound, just north of bell buoy off Lloyd Point, L. I.	Lat 41 57 45 Long 73 29 15	1	2bb	22	20	5.40	100
971	9.21	Long Island Sound, just north of bell buoy off Lloyd Point, L. I.	Lat 41 57 45 Long 73 29 15	25	2bb	21.5	20	5.40	100
972	9.23	Long Island Sound, just north of bell buoy off Lloyd Point, L. I.	Lat 41 57 45 Long 73 29 15	50	2bb	21.5	20	5.40	100
973	9.50	Long Island Sound, near red and black buoy off Eaton's Pt. L. I.	Lat 41 58 45 Long 73 24 40	1	2bb	22	20	5.40	100
974	9.51	Long Island Sound, near red and black buoy off Eaton's Pt. L. I.	Lat 41 58 45 Long 73 24 40	20	2bb	21.5	20	5.40	100
975	9.53	Long Island Sound, near red and black buoy off Eaton's Pt. L. I.	Lat 41 58 45 Long 73 24 40	40	2bb	21.5	20	5.40	100
976	11.45	Long Island Sound, by red buoy near Shatford Shoals lighthouse	Lat 41 03 15 Long 73 06 10	1	Flood	21.5	16	5.40	100
977	11.46	Long Island Sound, by red buoy near Shatford Shoals lighthouse	Lat 41 03 15 Long 73 06 10	20	Flood	21	16	5.40	100
978	11.48	Long Island Sound, by red buoy near Shatford Shoals lighthouse	Lat 41 03 15 Long 73 06 10	40	Flood	21	16	5.40	100

Ex. 94, p. 85

Dissolved Oxygen.

Course from New York to New London, Conn., by
Long Island Sound. (Continued.) August 17, 1911.

Sample No.	Hour P.M.	Location of Samples	Tidal		Per- cent water C	Per- cent land water	Oxygen saturation per litre
			Exact	Feet below surface	Temp.	Temp.	
		Approximate	O.	"	Surf.	Bottom	
979	12.45	Long Island Sound, 7 miles north of Rocky Pt. between Miller's and Hallock's landing	Lat 41 04 00	1	Flood	21.5	16 5.40 100
980	12.46	Long Island Sound, 7 miles north of Rocky Pt. between Miller's and Hallock's landing	Long 72 57 25 Lat 41 04 00	40	Flood	21	16 5.40 100
981	12.48	Long Island Sound, 7 miles north of Rocky Pt. between Miller's and Hallock's landing	Long 72 57 25 Lat 41 04 00	80	Flood	21	16 5.40 100
982	2.30	Long Island Sound, 4 miles south of Falkner Island, Conn.	Long 72 57 25 Lat 41 09 15	1	Flood	21.5	16 5.40 100
983	2.31	Long Island Sound, 4 miles south of Falkner Island, Conn.	Long 72 59 00 Lat 41 09 15	40	Flood	21	16 5.40 100
984	2.33	Long Island Sound, 4 miles south of Falkner Island, Conn.	Long 72 59 00 Lat 41 09 15	80	Flood	21	16 5.40 100
985	4.25	Long Island Sound near Cornfield Point lightship	Long 72 59 00 Lat 41 12 40	1	Flood	21	11 5.40 100
986	4.26	Long Island Sound near Cornfield Point lightship	Long 72 59 00 Lat 41 12 40	50	Flood	20.5	10 5.40 100
987	4.28	Long Island Sound near Cornfield Point lightship	Long 72 59 00 Lat 41 12 40	00	Flood	20.5	10 5.40 100
988	6.00	Long Island Sound near Bartlett Reef lightship off New London, Conn.	Long 72 59 00 Lat 41 16 15	1	Ebb	21	10 5.40 100
989	6.01	Long Island Sound near Bartlett Reef lightship off New London, Conn.	Long 72 59 00 Lat 41 16 15	25	Ebb	20.5	10 5.40 100
990	6.03	Long Island Sound near Bartlett Reef lightship off New London, Conn.	Long 72 59 00 Lat 41 16 15	50	Ebb	20.5	10 5.40 100

Ex. 94. p. 84

Dissolved Oxygen.

Course from New London, Conn. to Vineyard Haven, Mass.
August 18, 1911.

High water at New London at 3.13 a.m. Left New London 5.25 a.m. on boat Quakrant II.

Sample No.	Hour a.m.	Location of Samples Approximate	Exact g.	Feet below surface	Tidal cur- rent	Temp. Deg.C	Per- cent land water	Oxygen per saturation
991	6.15	Fisher Island sound, by Ram	Lat 41 18 00	1	Ebb	20	8	5.40 100
		Island lightship	Long 71 46 45					
992	6.16	Fisher Island sound, by Ram	Lat 41 18 00	25	Ebb	20	8	5.40 100
		Island lightship	Long 71 46 25					
993	6.18	Fisher Island sound, by Ram	Lat 41 18 00	50	Ebb	20	8	5.40 100
		Island lightship	Long 71 46 25					
994	6.50	Block Island sound by bell buoy	Lat 41 17 45	1	Ebb	20	8	5.40 100
		Just off Watch Hill Point	Long 71 51 50					
995	6.51	Block Island sound by bell buoy	Lat 41 17 45	20	Ebb	20	8	5.40 100
		Just off Watch Hill Point	Long 71 51 50					
996	6.53	Block Island sound by bell buoy	Lat 41 17 45	40	Ebb	20	8	5.40 100
		Just off Watch Hill Point	Long 71 51 50					
997	7.40	Block Island sound, 1 mile	Lat 41 18 45	1	Ebb	20	8	5.40 100
		South of Noyes Point	Long 71 45 00					
998	7.41	Block Island sound, 1 mile	Lat 41 18 45	20	Ebb	20	8	5.40 100
		South of Noyes Point	Long 71 45 00					
999	7.43	Block Island sound, 1 mile	Lat 41 18 45	50	Ebb	20	8	5.40 100
		South of Noyes Point	Long 71 45 00					
1000	9.00	Atlantic Ocean by whistling	Lat 41 20 30	1	Ebb	20	8	5.40 100
		buoy off Point Judith, R. I.	Long 71 28 30					
1001	9.01	Atlantic Ocean by whistling	Lat 41 20 30	20	Ebb	20	8	5.40 100
		buoy off Point Judith, R. I.	Long 71 28 30					
1002	9.03	Atlantic Ocean by whistling	Lat 41 20 30	40	Ebb	20	8	5.40 100
		buoy off Point Judith, R. I.	Long 71 28 30					
1003	11.50	Atlantic Ocean near Vineyard	Lat 41 22 40	1	Ebb	19.5	6	5.40 100
		Sound lightship	Long 71 00 00					
1004	11.51	Atlantic Ocean near Vineyard	Lat 41 22 40	40	Ebb	19.5	6	5.40 100
		Sound lightship	Long 71 00 00					

Course from New London, Conn. to Vineyard Haven, Mass. (continued) August 18, 1911.

Dissolved Oxygen.

Sample No.	Hour a.m.	Location of Samples	Approximate	Exact		Feet below surface	Tidal current per Deg. C	Temp. water per Deg. C	Per cent lead water	Oxygen per litre	C.C. percent saturation
				Lat	Long						
1005	11.53	Atlantic Ocean near Vineyard Sound lightship		Lat 41 22 40	Long 71 00 00	80	Ebb	19.5	6	5.40	100
1006	1.00	Vineyard Sound by bell buoy north of Gay Head, Marthas Vineyard		Lat 41 24 15	Long 71 01 20	1	Ebb	19.5	6	5.40	100
1007	1.01	Vineyard Sound, by bell buoy north of Gay Head, Marthas Vineyard		Lat 41 24 15	Long 71 01 20	25	Ebb	19.5	6	5.40	100
1008	1.03	Vineyard Sound by bell buoy north of Gay Head, Marthas Vineyard		Lat 41 24 15	Long 71 01 20	60	Ebb	19.5	6	5.40	100
1009	2.00	Vineyard Sound by bell buoy off Hobbs Pt. near Woods Hole		Lat 41 30 20	Long 70 51 20	1	Flood	20	6	5.40	100
1010	2.01	Vineyard Sound by bell buoy off Hobbs Pt. near Woods Hole		Lat 41 30 20	Long 70 51 20	50	Flood	20	6	5.40	100
1011	2.03	Vineyard Sound by bell buoy off Hobbs Pt. near Woods Hole		Lat 41 30 20	Long 70 51 20	60	Flood	20	6	5.40	100
1012	2.30	Vineyard Haven, at entrance to harbor		Lat 41 28 45	Long 70 58 40	1	Flood	20.5	6	5.40	100
1013	2.31	Vineyard Haven, at entrance to harbor		Lat 41 28 45	Long 70 58 40	30	Flood	20	6	5.40	100
1014	2.35	Vineyard Haven, at entrance to harbor		Lat 41 28 45	Long 70 58 40	60	Flood	20	6	5.40	100
1015	3.00	At Lords Wharf, Vineyard Haven, Mass.		Lat 41 27 15	Long 70 56 00	1	Flood	21	6	5.40	100
1016	3.01	At Lords Wharf, Vineyard Haven, Mass.		Lat 41 27 15	Long 70 56 00	10	Flood	21	6	5.40	100

Ex. 94. p. 86

Dissolved Oxygen.

Course from Vineyard, Mass., to Provincetown, Mass., around Cape Cod.

August 20, 1911.

High water at Vineyard Haven at 7.30 a.m. Very high N. W. wind, amounting to a gale, blew from 10 p.m. August 18 to 8 p.m. August 19 Held boat in Vineyard Haven harbor.

Sample No.	Hour a.m.	Location of Sample	Approximate		Fath. Temp. our- rent	Per- cent water	Per- cent land	Per- cent saturation	Oxygen N. W. Percent per litre
			Exact lat. & long.	Post below surface					
1017	5.00	At Lords Wharf, Vineyard Haven	Lat 41 27 15 Long 70 26 00	1	Flood 20.5	6	5.40	100	
1018	5.01	At Lords Wharf, Vineyard Haven	Lat 41 27 15 Long 70 26 00	10	Flood 20.5	6	5.40	100	
1019	5.10	Vineyard Haven, at entrance to harbor	Lat 41 28 45 Long 70 26 25	1	Flood 20.5	6	5.40	100	
1020	5.11	Vineyard Haven, at entrance to harbor	Lat 41 28 45 Long 70 26 25	20	Flood 20	6	5.40	100	
1021	5.13	Vineyard Haven, at entrance to harbor	Lat 41 28 45 Long 70 26 25	60	Flood 20	6	5.40	100	
1022	5.23	Vineyard Sound, 1/2 mile off dock at Oak Bluffs	Lat 41 28 20 Long 70 26 20	1	Flood 20.5	6	5.40	100	
1023	5.24	Vineyard Sound, 1/2 mile off dock at Oak Bluffs	Lat 41 28 20 Long 70 24 45	20	Flood 20	6	5.40	100	
1024	5.26	Vineyard Sound, 1/2 mile off dock at Oak Bluffs	Lat 41 28 20 Long 70 24 45	45	Flood 20	6	5.40	100	
1025	6.00	Atlantic Ocean near Hedge Fence Lightship	Lat 41 28 20 Long 70 24 45	1	Flood 19.5	4	5.40	100	
1026	6.01	Atlantic Ocean near Hedge Fence Lightship	Lat 41 28 20 Long 70 24 45	25	Flood 19	4	5.40	100	
1027	6.03	Atlantic Ocean near Hedge Fence Lightship	Lat 41 28 20 Long 70 24 45	50	Flood 19	4	5.40	100	

Disolved oxygen. Course from Vineyard, Mass. to Provincetown, Mass around Cape Cod. (Continued.) August 20, 1911.

Sample No.	Hour m.m.	Location of Sample	Approximate	Foot		Tidal Temp. per- cent water cent per deg. C	Per- cent saturation
				Exact	below surface		
1028	9.00	Atlantic Ocean near Cross Rip Lightship	Lat 41 26 50 Long 70 19 26	1	Flood	19.6	4 5.40 100
1029	9.01	Atlantic Ocean near Cross Rip Lightship	Lat 41 26 50 Long 70 19 26	28	Flood	19	4 5.40 100
1030	9.08	Atlantic Ocean near Cross Rip Lightship	Lat 41 26 50 Long 70 19 26	50	Flood	19	4 5.40 100
1031	8.80	Atlantic Ocean near Hatterchief Lightship	Lat 41 29 18 Long 70 04 00	1	Ebb	18	4 5.84 100
1032	8.81	Atlantic Ocean near Hatterchief Lightship	Lat 41 29 18 Long 70 04 00	18	Ebb	18	4 5.84 100
1033	8.28	Atlantic Ocean near Hatterchief Lightship	Lat 41 29 18 Long 70 04 00	50	Ebb	18	4 5.84 100
1034	9.10	Atlantic Ocean near Shovel Pull Lightship off Monomoy Beach, Cape Cod	Lat 41 22 40 Long 69 59 40	1	Ebb	18	4 5.84 100
1035	9.11	Atlantic Ocean near Shovel Pull Lightship off Monomoy Beach, Cape Cod	Lat 41 22 40 Long 69 59 40	28	Ebb	17	4 5.84 100
1036	9.15	Atlantic Ocean near Shovel Pull Lightship off Monomoy Beach, Cape Cod	Lat 41 22 40 Long 69 59 40	50	Ebb	17	4 5.84 100
1037	9.45	Atlantic Ocean near Pollock Rip Lightship	Lat 41 22 00 Long 69 54 40	1	Ebb	17	4 5.68 100
1038	9.46	Atlantic Ocean near Pollock Rip Lightship	Lat 41 22 00 Long 69 54 40	28	Ebb	17	4 5.68 100
1039	9.48	Atlantic Ocean near Pollock Rip Lightship	Lat 41 22 00 Long 69 54 40	50	Ebb	17	4 5.68 100
1040	10.18	Atlantic Ocean near Pollock Rip Shoals Lightship	Lat 41 26 26 Long 69 55 50	1	Ebb	17	4 5.68 100

Conceal from Vineyard Haven, Mass. No. 1000000000.
Mass. around Cape Cod. (Continued.) August 20, 1911.

Discovered oxygen.

Sample No.	Hour a.m.	Approximate Location of Sample	East of surface	East of surface	Total Temp. deg. C.	Temp. deg. C. at surface	Percent saturation
1041	10.16	Atlantic Ocean near Pellico Nip	Lat 41 26 28	20	20	4	5.48 100
1042	10.16	Shoals lightship	Long 69 59 50				
1043	10.16	Atlantic Ocean near Pellico Nip	Lat 41 26 28	40	40	4	5.48 100
1044	11.16	Shoals lightship	Long 69 59 50				
1045	11.16	Atlantic Ocean, 4 miles east of	Lat 41 41 00	1	1	4	5.49 100
1046	11.16	Chatham lighthouse	Long 69 52 10				
1047	11.16	Atlantic Ocean, 4 miles east of	Lat 41 41 00	20	20	4	5.48 100
1048	11.16	Chatham lighthouse	Long 69 52 10				
1049	11.16	Atlantic Ocean, 4 miles east of	Lat 41 41 00	50	50	4	5.48 100
1050	11.16	Chatham lighthouse	Long 69 52 10				
1051	12.48	Atlantic Ocean, 1 1/2 miles off	Lat 41 51 50	1	1	4	5.48 100
1052	12.48	Atlantic Ocean, 1 1/2 miles off	Long 69 55 28				
1053	12.48	Atlantic Ocean, 1 1/2 miles off	Lat 41 51 50	28	28	4	5.48 100
1054	12.48	Atlantic Ocean, 1 1/2 miles off	Long 69 55 28				
1055	12.48	Atlantic Ocean, 1 1/2 miles off	Lat 41 51 50	70	70	4	5.48 100
1056	12.48	Atlantic Ocean, 1 mile off	Long 69 55 28				
1057	12.48	Atlantic Ocean, 1 mile off	Lat 42 02 48	1	1	4	5.48 100
1058	12.48	Atlantic Ocean, 1 mile off	Long 70 02 36				
1059	12.48	Atlantic Ocean, 1 mile off	Lat 42 02 48	50	50	4	5.48 100
1060	12.48	Atlantic Ocean, 1 mile off	Long 70 02 36				
1061	12.48	Atlantic Ocean, 1 mile off	Lat 42 02 48	60	60	4	5.48 100
1062	12.48	Atlantic Ocean, 1 mile off	Long 70 02 36				
1063	12.48	Atlantic Ocean, 1 mile off	Lat 42 02 48	1	1	4	5.48 100
1064	12.48	Atlantic Ocean, 1 mile off	Long 70 15 06				
1065	12.48	Atlantic Ocean, 1 mile off	Lat 42 02 48	80	80	4	5.48 100
1066	12.48	Atlantic Ocean, 1 mile off	Long 70 15 06				
1067	12.48	Atlantic Ocean, 1 mile off	Lat 42 02 48	100	100	4	5.48 100
1068	12.48	Atlantic Ocean, 1 mile off	Long 70 15 06				
1069	12.48	Atlantic Ocean, 1 mile off	Lat 42 02 48	1	1	4	5.48 100
1070	12.48	Atlantic Ocean, 1 mile off	Long 70 09 40				

Dissolved Oxygen.

Course from Vineyard Haven, Mass. to Provincetown,
Mass. around Cape Cod. (Continued.) August 20, 1911.

Sample No.	Hour P.M.	Location of Samples		Exact G.	Feet below surface	Tidal Temp. Per- cent		Oxygen C.C. Percent	
		Approximate				cur- rent	land	per	saturation
1066	4.16	Cape Cod Bay by bell buoy off Long Point light, just outside Provincetown	Lat 42 01 50 Long 70 09 45	50	30	Flood	17	6	5.68 100
1067	4.18	Cape Cod Bay by bell buoy off Long Point light, just outside Provincetown	Lat 42 01 50 Long 70 09 46	50	60	Flood	17	6	5.68 100

Ex. 94. p. 90.

Dissolved Oxygen.

Course from Provincetown to Boston, Mass.

High water at Provincetown at 8.25 a.m.

August 21, 1911.

Sample No.	Hour a.m.	Location of Samples	Exact " "	Feet below surface	Tidal temp. our- water cent Deg.C	Per- cent land per water litre	Oxygen	Percent saturation
1068	5.00	Provincetown harbor 1 mile north of Long Point lighthouse	Lat 42 02 45 Long 70 10 20	1	Flood 18.5	6	5.68	100
1069	5.01	Provincetown harbor 1 mile north of Long Point lighthouse	Lat 42 02 45 Long 70 10 20	20	Flood 18	5	5.68	100
1060	5.03	Provincetown harbor 1 mile north of Long Point lighthouse	Lat 42 02 45 Long 70 10 20	40	Flood 18	5	5.68	100
1061	5.05	Cape Cod bay by white buoy off Race Point outside Provincetown	Lat 42 02 45 Long 70 15 05	1	Flood 18	5	5.69	100
1062	5.06	Cape Cod bay by white buoy off Race Point outside Provincetown	Lat 42 02 45 Long 70 15 05	50	Flood 18	4	5.68	100
1063	5.08	Cape Cod bay by white buoy off Race Point outside Provincetown	Lat 42 02 45 Long 70 15 05	100	Flood 18	4	5.68	100
1064	5.45	Massachusetts bay, 2 miles N. W. of Race Point, Cape Cod	Lat 42 04 35 Long 70 16 35	1	Flood 18.5	4	5.68	100
1065	5.46	Massachusetts bay, 2 miles N. W. of Race Point, Cape Cod	Lat 42 04 35 Long 70 16 35	50	Flood 18	4	5.68	100
1066	5.48	Massachusetts bay, 2 miles N. W. of Race Point, Cape Cod	Lat 42 04 35 Long 70 16 35	100	Flood 18	4	5.68	100
1067	10.00	Massachusetts bay by black buoy 2 miles off Winos ledge light	Lat 42 16 40 Long 70 42 20	1	Ebb 18.5	6	5.54	100
1068	10.01	Massachusetts bay by black buoy 2 miles off Minots ledge light	Lat 42 16 40 Long 70 42 20	25	Ebb 18.5	6	5.54	100
1069	10.03	Massachusetts bay by black buoy 2 miles off Minots ledge light	Lat 42 16 40 Long 70 42 20	50	Ebb 18.5	6	5.54	100
1070	11.00	Massachusetts bay, 1 mile S. E. of Boston light	Lat 42 19 15 Long 70 53 25	1	Ebb 18.5	6	5.54	100
1071	11.01	Massachusetts bay, 1 mile S. E. of Boston light	Lat 42 19 15 Long 70 53 25	20	Ebb 18.5	6	5.54	100
1072	11.03	Massachusetts bay, 1 mile S. E. of Boston light	Lat 42 19 15 Long 70 53 25	40	Ebb 18.5	6	5.54	100

Ex. 94. p. 91.

Dissolved Oxygen.

Course from Provincetown to Boston, Mass.

August 21, 1911.

High water at Boston at 8.33 a.m. Tied up in Charles river.

Sample No.	Hour a.m.	Location of Samples		Exact	Feet below surface	Tidal current	Temp. water	Per cent	Oxygen
		Approximate							
1073	11.20	Boston Harbor, The Narrows between Lovells Is. and Gallups Island	Lat 42 19 35 Long 70 56 55	1	Ebb	19.5	6	5.47	100
1074	11.21	Boston Harbor, The Narrows between Lovells Is. and Gallups Island	Lat 42 19 36 Long 70 56 56	15	Ebb	19	6	5.47	100
1075	11.23	Boston Harbor, The Narrows between Lovells Is. and Gallups Island	Lat 42 19 36 Long 70 56 56	30	Ebb	19	6	5.47	100
1076	11.45	Midway between Governors Island and Castle Island	Lat 42 20 42 Long 71 00 42	1	Ebb	19.5	6	5.11	98
1077	11.46	Midway between Governors Island and Castle Island	Lat 42 20 42 Long 71 00 42	15	Ebb	19	6	5.28	98
1078	11.46	Midway between Governors Island and Castle Island	Lat 42 20 42 Long 71 00 42	30	Ebb	19	6	5.28	98
1079	12.15	Midway between East Boston docks and entrance to South bay	Lat 42 21 39 Long 71 02 35	1	Ebb	19.5	6	4.93	91
1080	12.16	Midway between East Boston docks and entrance to South bay	Lat 42 21 39 Long 71 02 35	15	Ebb	19	6	5.07	94
1081	12.17	Midway between East Boston docks and entrance to South bay	Lat 42 21 39 Long 71 02 35	30	Ebb	19	6	5.07	94
1082	12.40	Charles river, near mouth, just below last drawbridge	Lat 42 22 07 Long 71 03 30	1	Ebb	19.5	10	2.27	42
1083	12.41	Charles river, near mouth, just below last drawbridge	Lat 42 22 07 Long 71 03 30	10	Ebb	19	8	3.41	63
1084	12.43	Charles river, near mouth, just below last drawbridge	Lat 42 22 07 Long 71 03 30						

Ex. 94. p. 92

Dissolved Oxygen. Boston Harbor, Inner harbor to South Channel in outer harbor. August 23, 1911.

High water at Boston at 10.30 a.m. Low water at 4.30 p.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Exact g.	Feet below surface	Tidal Temp. our-vent	Per- cent Deg. C	Per- cent water out	Oxygen per litre	Percent saturation
1005	9.10	Boston inner harbor midway between East Boston docks and entrance to South Bay, Boston	Lat 42 21 29	1	Flood 19.5	6	5.40	100		
1006	9.11	Boston inner harbor midway between East Boston docks and entrance to South Bay, Boston	Long 71 02 26	18	Flood 19.5	6	5.40	100		
1007	9.13	Boston inner harbor midway between East Boston docks and entrance to South Bay, Boston	Lat 42 21 29	20	Flood 19.5	6	5.40	100		
1008	9.22	Boston inner harbor by red buoy 10 midway between Governors Island and East Boston docks	Long 71 02 56	1	Flood 19.5	6	5.40	100		
1009	9.24	Boston inner harbor by red buoy 10 midway between Governors Island and East Boston docks	Long 71 01 10	10	Flood 19	6	5.40	100		
1090	9.26	Boston inner harbor by red buoy 10 midway between Governors Island and East Boston docks	Long 71 01 10	15	Flood 19	6	5.40	100		
1091	9.26	Boston inner harbor midway between Governors Is. and Castle Island	Long 71 01 10	1	Flood 19.5	6	5.26	98		
1092	9.27	Boston inner harbor midway between Governors Is. and Castle Island	Long 71 00 42	18	Flood 19	6	5.40	100		
1093	9.29	Boston inner harbor midway between Governors Is. and Castle Island	Long 71 00 42	30	Flood 19	6	5.40	100		
1094	9.35	Boston outer harbor midway between Dear Is. light and Governor Is.	Long 71 00 42	1	Flood 19.5	6	5.40	100		
1095	9.56	Boston outer harbor midway between Dear Is. light and Governor Is.	Long 70 59 48	10	Flood 19	6	5.40	100		

Disolved Oxygen. Boston Harbor, Inner Harbor to South Channel in
enter harbor. (Continued.) August 29, 1911.

Sample No.	Hour a.m.	Location of Sample		Exact Time	Fath below surface	Tidal Test.		Per- cent water content	Oxygen per cubic foot water
		Approximate				rent Deg. C	water surface		
1096	9.50	Boston enter harbor midway between Deer Is. light and Governors Is.	Lat 42 20 26 Long 70 28 43	20	Flood	19	6	5.40	100
1097	10.15	Boston enter harbor midway between Deer Is. light and Long Island light	Lat 42 20 26 Long 70 27 13	1	Flood	19.5	6	5.42	100
1098	10.19	Boston enter harbor midway between Deer Is. light and Long Is. light	Lat 42 20 06 Long 70 27 13	20	Flood	19	4	5.42	100
1099	10.21	Boston enter harbor midway between Deer Is. light and Long Is. light	Lat 42 20 06 Long 70 27 13	60	Flood	19	4	5.42	100
1100	10.40	Boston enter harbor by gas buoy 8, entrance to South Channel	Lat 42 20 34 Long 70 28 04	1	Flood	18	4	5.47	100
1101	10.41	Boston enter harbor by gas buoy 8, entrance to South Channel	Lat 42 20 34 Long 70 28 04	20	Flood	17	4	5.47	100
1102	10.43	Boston enter harbor by gas buoy 8, entrance to South Channel	Lat 42 20 34 Long 70 28 04	40	Flood	17	4	5.47	100
1103	8.00	Boston inner harbor midway between Deer Is. light and Long Is. light	Lat 42 21 39 Long 70 25 04	1	Ebb	19.5	6	4.51	84
1104	8.01	Boston inner harbor midway between Deer Is. light and Long Is. light	Lat 42 21 39 Long 70 25 04	15	Ebb	19	6	4.63	86
1105	8.02	Boston inner harbor midway between Deer Is. light and Long Is. light	Lat 42 21 39 Long 70 25 04	20	Ebb	19	6	4.65	86
1106	8.03	Boston inner harbor midway between Deer Is. light and Long Is. light	Lat 42 21 39 Long 70 25 04	1	Ebb	19.5	6	4.52	84
1107	8.04	Boston inner harbor midway between Deer Is. light and Long Is. light	Lat 42 21 39 Long 70 25 04	1	Ebb	19.5	6	4.51	84
1108	8.05	Boston inner harbor midway between Deer Is. light and Long Is. light	Lat 42 21 39 Long 70 25 04	1	Ebb	19.5	6	4.51	84
1109	8.06	Boston inner harbor midway between Deer Is. light and Long Is. light	Lat 42 21 39 Long 70 25 04	1	Ebb	19.5	6	4.51	84
1110	8.07	Boston inner harbor midway between Deer Is. light and Long Is. light	Lat 42 21 39 Long 70 25 04	1	Ebb	19.5	6	4.51	84

Discolored Oxygen Boston Harbor—from inner harbor to South channel in outer harbor August 20, 1911

High water at Boston 12.10 P. M.

Sample No.	Hour a.m.	Location of Sample	Approximate	East 0° 0'	Feet below surface	Tidal current	Temp. water Deg. C	Percent land water	Oxygen	
									U.C. per litre	Percent
1121	9.00	Boston inner harbor—midway between East Boston dock and extreme to South bay	"	Lat 42 21 39 Long 71 02 38	1	Flood	19.8	6	5.00	98
1122	9.01	"	"	Lat 42 31 39 Long 71 02 38	18	Flood	19	5	5.86	97
1123	9.08	"	"	Lat 42 31 39 Long 71 02 38	80	Flood	19	6	5.84	97
1124	9.15	Boston inner harbor—by red buoy 10—midway between Governors Island and East Boston dock	"	Lat 42 21 38 Long 71 01 10	1	Flood	19.8	6	5.02	97
1125	9.14	"	"	Lat 42 21 38 Long 71 01 10	10	Flood	19	6	5.86	99
1126	9.16	"	"	Lat 42 21 38 Long 71 01 10	15	Flood	19	6	5.86	99
1127	9.26	Boston inner harbor—midway between Governors Island and Castle Island	"	Lat 42 20 42 Long 71 00 42	1	Flood	26.5	6	5.11	90
1128	9.27	"	"	Lat 42 20 42 Long 71 00 42	18	Flood	19	6	5.40	100
1129	9.29	"	"	Lat 42 20 42 Long 71 00 42	30	Flood	19	6	5.40	100

Br. 94, p. 96

Dissolved Oxygen Boston harbor-inner harbor to South channel August 25, 1911
 in outer harbor
 (Continued)

Sample No.	Hour a.m.	Location of Samples		Exact O.	Feet below surface	Tidal current	Temp. water Deg o	Percent water	Oxygen C.C. per litre	Percent saturation
		Approximate	be-Lat and Long							
1130	9.45	Boston outer harbor-midway between Deer Island light and Governors Island	Lat 42 20 36 Long 70 58 45	1	Flood	19.5	6	5.42	100	
1131	9.46	"	Lat 42 20 36 Long 70 58 45	10	Flood	19	6	5.42	100	
1132	9.48	"	Lat 42 20 36 Long 70 58 45	20	Flood	19	6	5.42	100	
1133	10.10	Boston outer harbor-midway between Deer Island light and Long Island light.	Lat 42 20 06 Long 70 57 13	1	Flood	19.5	6	5.40	100	
1134	10.11	"	Lat 42 20 06 Long 70 57 13	30	Flood	19	4	5.40	100	
1135	10.13	"	Lat 42 20 06 Long 70 57 13	60	Flood	19	4	5.40	100	
1136	10.30	Boston outer harbor-by gas buoy 8 entrance to South channel	Lat 42 20 34 Long 70 56 04	1	Flood	19.5	4	5.42	100	
1137	10.31	"	Lat 42 20 34 Long 70 56 04	15	Flood	19	4	5.42	100	
1138	10.33	"	Lat 42 20 34 Long 70 56 04	30	Flood	19	4	5.42	100	

Ex. 94. p.97

Dissolved Oxygen Boston Harbor—from inner harbor to South Channel
 in outer harbor August 28, 1911
 (Continued)

Sample No.	Hour P.M.	Location of Samples		Exact 0° " surface	Feet below current water	Tidal current	Temp. water, Deg. C	Percent water, per litre	Oxygen, Percent saturation
		Approximate							
1151	4.12	Boston outer harbor—midway between Deer Island Light and Governors Island	Lat 42 20 06 Long 70 57 13	1	2bb	19	6	5.40	100
1152	4.13	"	Lat 42 20 06 Long 70 57 13	30	2bb	19	6	5.40	100
1153	4.16	"	Lat 42 20 06 Long 70 57 13	60	2bb	19	6	5.40	100
1154	4.30	Boston outer harbor—by Gas buoy 9 at entrance to South channel	Lat 42 20 34 Long 70 56 04	1	2bb	19	6	5.42	100
1155	4.31	"	Lat 42 20 34 Long 70 56 04	15	2bb	19	6	5.42	100
1156	4.33	"	Lat 42 20 34 Long 70 56 04	30	2bb	19	4	5.42	100

Ex. 94, p. 99

Dissolved Oxygen Boston inner harbor at Charles River. August 22, 1911
High water at Boston at 2.26 P. M.

Sample No.	Hour S.M.	Location of Sample	Approximate	Exact	Feet below surface	Tidal current	Temp.		Oxygen
							water	Percent	
							Deg.C.	water	per saturation
								liters	liters
1157	8.46	Charles river-midway between south and lowest bridge	Lat 42 22 15 Long 71 08 18	1	Ebb	20	82	3.79	81
1158	8.46	Charles river-midway between south and lowest bridge	Lat 42 22 15 Long 71 08 18	15	Ebb	19.5	84	3.39	45
1159	8.46	Charles river-midway between south and lowest bridge	Lat 42 22 15 Long 71 08 18	30	Ebb	19.5	84	3.39	45
1160	9.00	Inner harbor off mouth of Charles river midway to East Boston	Lat 42 22 15 Long 71 08 55	1	Flood	19.5	16	3.64	86
1161	9.01	"	Lat 42 22 15 Long 71 08 55	15	Flood	19	18	3.98	74
1162	9.03	"	Lat 42 22 15 Long 71 08 55	30	Flood	19	18	3.98	74
1163	9.10	Inner harbor-midway between Charlestown and East Boston-river	Lat 42 22 36 Long 71 08 47	1	Flood	19.5	18	3.75	70
1164	9.11	"	Lat 42 22 36 Long 71 08 47	15	Flood	19	10	3.89	72
1165	9.13	"	Lat 42 22 36 Long 71 08 47	30	Flood	19	10	3.89	72
1166	9.20	Inner-harbor-off mouth of Chelsea river	Lat 42 23 09 Long 71 08 28	1	Flood	19.5	10	3.77	70
1167	9.21	Inner harbor-off mouth of Chelsea river	Lat 42 23 09 Long 71 08 28	15	Flood	19	8	4.06	75
1168	9.23	Inner harbor-off mouth of Chelsea river	Lat 42 23 09 Long 71 08 28	35	Flood	19	8	4.06	75
1169	9.30	Inner harbor-just below Mystic river bridge	Lat 42 23 05 Long 71 08 45	1	Flood	19.5	10	3.83	71
1170	9.31	Inner harbor-just below Mystic river bridge	Lat 42 23 05 Long 71 08 45	15	Flood	19	8	4.00	74
1171	9.33	Inner harbor-just below Mystic river bridge	Lat 42 23 05 Long 71 08 45	30	Flood	19	8	4.00	74

EX. 84. P. 106.

Dissolved Oxygen Boston inner harbor August 29, 1911
 (Continued)

Sample No.	Hour &c.	Location of Samples	Approximate	Exact	Feet below surface	Tidal current	Temp. water Deg C	Percent land water	Oxygen C.C. per cent	Oxygen per litre	Saturation
1172	9.40	Inner harbor—just off South branch of Mystic river	Lat 42 22 46 Long 71 02 53	46	1	Flood	19.8	16	2.88		77
1173	9.41	Inner harbor—just off South branch of Mystic river	Lat 42 22 46 Long 71 02 53	46	16	Flood	19	6	4.10		77
1174	9.42	Inner harbor—just off South branch of Mystic river	Lat 42 22 46 Long 71 02 53	46	30	Flood	19	8	4.10		77
1175	12.00	Charles river—midway between mouth and lowest bridge	Lat 42 22 15 Long 71 03 18	15	1	Flood	19.8	38	2.03		86
1176	12.01	Charles river—midway between mouth and lowest bridge	Lat 42 22 15 Long 71 03 18	15	16	Flood	19.8	18	3.40		83
1177	12.02	Charles river—midway between mouth and lowest bridge	Lat 42 22 15 Long 71 03 18	15	30	Flood	19.8	18	3.40		83

Ex. 94.p.101.

Disolved Oxygen
Section enter harbor in the vicinity
of Bear Island light, August 20, 1911

High water at Boston at 2.52 p.m.

Sample No.	Hour p.m.	Location of Sample	Approximate	Depth fathoms	Feet below surface	Tidal current	Temp. water deg. C	Percent oxygen	Land water per cent
1176	1.00	Boston enter harbor-midway between Bear Island light and Governors Island		Lat 42 50 04 Long 70 50 48	1	Flood	19	6	5.40 100
1179	1.01	"		Lat 42 50 06 Long 70 50 48	10	Flood	19	6	5.40 100
1180	1.09	"		Lat 42 50 06 Long 70 50 48	80	Flood	19	6	5.40 100
1181	2.50	80 feet south of Bear Is. light		Lat 42 50 02 Long 70 50 17	1	Ebb	19.5	16	5.07 92
1182	2.51	80 feet south of Bear Is. light		Lat 42 50 02 Long 70 50 17	12	Ebb	19	8	5.37 99
1183	2.00	100 feet south of Bear Is. light		Lat 42 50 02 Long 70 50 17	1	Ebb	19.5	16	5.07 92
1184	2.01	100 feet south of Bear Is. light		Lat 42 50 02 Long 70 50 17	80	Ebb	19	6	5.26 99
1185	2.02	100 feet south of Bear Is. light		Lat 42 50 02 Long 70 50 17	60	Ebb	19	6	5.26 99
1186	2.12	800 feet southeast of Bear Is. light		Lat 42 50 22 Long 70 50 12	1	Ebb	19.5	10	5.00 92
1187	2.12	500 feet southeast of Bear Is. light		Lat 42 50 22 Long 70 50 12	80	Ebb	19	6	5.42 100
1188	2.12	500 feet southeast of Bear Is. light		Lat 42 50 22 Long 70 50 12	60	Ebb	19	6	5.42 100
1189	2.20	1000 feet east of Bear Is. light		Lat 42 50 08 Long 70 50 08	1	Ebb	19	6	5.40 100
1190	2.21	1000 feet east of Bear Is. light		Lat 42 50 08 Long 70 50 08	88	Ebb	19	6	5.40 100
1191	2.22	1000 feet east of Bear Is. light		Lat 42 50 08 Long 70 50 08	80	Ebb	19	6	5.40 100

Discharge current Date and time of August 28, 1913
 (Continued)

Sample No.	Hour P.M.	Location of Sample		Tidal current	Temp. water Deg. C	Percent sand water per saturation	Oxygen liter per liter
		Approximate	Exact				
1182	3.30	Near buoy B inside South channel	Lat 42 20 34 Long 70 58 04	ebb	19	6	5.47 100
1188	3.31	Near buoy B inside South channel	Lat 42 20 34 Long 70 58 04	ebb	19	6	5.47 100
1194	3.35	Near buoy B inside South channel	Lat 42 20 34 Long 70 58 04	ebb	19	6	5.47 100

Ex. 94, p. 103

94533

Dissolved Oxygen

Boston inner harbor and Charles river. August 29, 1911

High water at Boston at 3.17 p.m.

Sample No.	Hour a.m.	Location of Samples	Exact		Tidal current	Temp. water	Percent oxygen
			Lat	Long				below surface	Deg.C	water per litre	Percent oxygen
1195	9.00	Charles river midway between mouth and lowest bridge	Lat 42 22 15	1 Flood	20	26	2.27
1196	9.01	Charles river midway between mouth and lowest bridge	Lat 42 22 15	15 Flood	19.5	16	3.41
1197	9.03	Charles river midway between mouth and lowest bridge	Lat 42 22 15	30 Flood	19.5	16	3.41
1198	9.20	Inner harbor-midway between East Boston docks and entrance to South bay	Lat 42 21 39	1 Flood	19.5	10	3.69
1199	9.21	"	Lat 42 21 39	15 Flood	19	6	4.26
1200	9.23	"	Lat 42 21 39	30 Flood	19	6	4.26
1201	9.33	Inner harbor-by buoy 10 between East Boston docks and Governors Island	Lat 42 21 35	1 Flood	19.5	10	4.48
1202	9.34	"	Lat 42 21 35	10 Flood	19	6	4.83
1203	9.36	"	Lat 42 21 35	15 Flood	19	6	4.83
1204	9.51	Inner harbor-midway between Governors Island and Castle Is.	Lat 42 20 42	1 Flood	19.5	10	4.64
1205	9.52	"	Lat 42 20 42	15 Flood	19	6	5.11
1206	9.54	"	Lat 42 20 42	30 Flood	19	6	5.11
1207	10.05	Outer harbor-midway between Governors Is and Deer Is light	Lat 42 20 36	1 Flood	19.5	8	5.40
1208	10.06	"	Lat 42 20 36	10 Flood	19	6	5.40
1209	10.08	"	Lat 42 20 36	20 Flood	19	6	5.40

Ex. 94. P.104

Dissolved Oxygen
 Boston outer harbor in the vicinity
 of Deer Island light
 August 29, 1911
 (Continued)

Sample No.	Hour a.m.	Location of Samples		Exact C. F. S.	Feet below surface	Tidal current	Temp. water Deg C	Percent Oxygen	
		Approximate						land water	Per cent per satu- ration
1210	10.18	1000 feet west of Deer Is light	Lat 42 20 22 Long 70 57 30	1	Flood	19.5	12	5.07	94
1211	10.19	1000 feet west of Deer Is light	Lat 42 20 22 Long 70 57 30	20	Flood	19	6	5.52	100
1212	10.21	1000 feet west of Deer Is light	Lat 42 20 22 Long 70 57 30	45	Flood	19	6	5.52	100
1213	10.40	10 feet west of Sewer outlet at Deer Is light	Lat 42 20 23 Long 70 57 18	1	Flood	19.5	32	2.99	53
1214	10.42	10 feet west of Sewer outlet at Deer Is light	Lat 42 20 23 Long 70 57 18	7	Flood	19	11	4.79	89

Ex. 94. p.105

Dissolved Oxygen Boston inner harbor and Charles River August 29, 1911

High water at Boston at 5.17 P. M.

Sample No.	Hour P.M.	Location of Sample		Exact O. M.	Feet below surface	Tidal current water below surface	Temp. Deg C	Percent Dissolved Oxygen
		Approximate						litre per gallon
1215	1.20	Charles river midway between mouth and lowest bridge	Lat 42 22 15 Long 71 03 10	1	Flood	19.5	52	2.27
1216	1.21	Charles river midway between mouth and lowest bridge	Lat 42 22 15 Long 71 03 10	15	Flood	19	13	3.41
1217	1.23	Charles river midway between mouth and lowest bridge	Lat 42 22 15 Long 71 03 10	30	Flood	19	10	3.42
1218	1.33	Midway between East Boston docks and entrance to South bay	Lat 42 21 39 Long 71 02 35	1	Flood	19.5	10	4.38
1219	1.33	Midway between East Boston docks and entrance to South bay	Lat 42 21 39 Long 71 02 35	15	Flood	19	6	4.79
1220	1.35	Midway between East Boston docks and entrance to South bay	Lat 42 21 39 Long 71 02 35	30	Flood	19	6	4.79
1221	1.44	By buoy 10 between Governors Is and East Boston docks	Lat 42 21 35 Long 71 01 10	1	Flood	19.5	10	4.69
1222	1.45	By buoy 10 between Governors Is and East Boston docks	Lat 42 21 35 Long 71 01 10	10	Flood	19	6	5.11
1223	1.47	By buoy 10 between Governors Is and East Boston docks	Lat 42 21 35 Long 71 01 10	15	Flood	19	6	5.11
1224	1.57	Midway between Governors Is and Castle Is	Lat 42 20 42 Long 71 00 43	1	Flood	19.5	8	5.22
1225	1.58	Midway between Governors Is and Castle Is	Lat 42 20 42 Long 71 00 43	15	Flood	19	6	5.20
1226	2.00	Midway between Governors Is and Castle Is	Lat 42 20 42 Long 71 00 43	30	Flood	19	6	5.20
1227	2.20	Midway between Governors Is and Deer Is light	Lat 42 20 36 Long 70 58 48	1	Flood	19	6	5.40
1228	2.21	Midway between Governors Is and Deer Is light	Lat 42 20 36 Long 70 58 48	10	Flood	19	6	5.40
1229	2.23	Midway between Governors Is and Deer Is light	Lat 42 20 36 Long 70 58 48	20	Flood	19	6	5.40

Dissolved Oxygen
 Boston outer harbor in the vicinity
 of Deer Island light August 29, 1911

High water at Boston at 3.17 P.M.

Sample No.	Hour P.M.	Location of Sample	Approximate	Exact O. 2.	Feet below surface	Tidal current	Temp. water Deg C	Present Oxygen	
								land water per liter	C.C. percent saturation
1250	2.30	500 feet east of Deer Is light		Lat 42 20 26 Long 70 57 12	1	Flood	19	11	4.95 91
1251	2.31	500 feet east of Deer Is light		Lat 42 20 26 Long 70 57 12	15	Flood	19	8	5.80 100
1252	2.33	500 feet east of Deer Is light		Lat 42 20 26 Long 70 57 12	30	Flood	19	7	5.50 100
1253	3.45	250 feet east of Deer Is light		Lat 42 26 26 Long 70 57 14	Surface	Ebb	19.5	12	4.95 91
1254	3.46	250 feet east of Deer Is light		Lat 42 26 26 Long 70 57 14	1	Ebb	19.5	12	4.95 91
1255	3.48	250 feet east of Deer Is light		Lat 42 26 26 Long 70 57 14	2	Ebb	19	10	5.11 95
1256	3.50	250 feet east of Deer Is light		Lat 42 26 26 Long 70 57 14	3	Ebb	19	8	5.40 100
1257	3.52	250' east of Deer Is light		Lat 42 26 26 Long 70 57 14	5	Ebb	19	6	5.47 100
1258	3.54	250' east of Deer Is light		Lat 42 26 26 Long 70 57 14	10	Ebb	19	6	5.47 100
1259	3.56	250' east of Deer Is light		Lat 42 26 26 Long 70 57 14	15	Ebb	19	6	5.52 100
1260	3.58	250' east of Deer Is light		Lat 42 26 26 Long 70 57 14	30	Ebb	19	6	5.52 100

Ex. 94. p. 107

Dissolved Oxygen Station water barrow in the vicinity of August 30, 1911
High water at Station at 4.00 p.m. Deer Island light

Sample No.	Hour a.m.	Location of Sample	Approximate	Exact	Feet below surface	Tidal current	Temp. water Deg.-C	Percent Dissolved water per cubic foot	Oxygen C.C. Percent	
1241	11.00	100 feet southwest of Deer Is light		Lat 48 30 25 Long 70 37 18	Surface Flood		19.8	18	4.83	90
1242	11.01	100 feet southwest of Deer Is light		Lat 48 30 25 Long 70 37 18	1	Flood	19.8	18	4.82	90
1243	11.03	100 feet southwest of Deer Is light		Lat 48 30 25 Long 70 37 18	2	Flood	19	6	5.26	98
1244	11.04	100 feet southwest of Deer Is light		Lat 48 30 25 Long 70 37 18	3	Flood	19	6	5.42	100
1245	11.07	100 feet southwest of Deer Is light		Lat 48 30 25 Long 70 37 18	8	Flood	19	6	5.47	100
1246	11.09	100 feet southwest of Deer Is light		Lat 48 30 25 Long 70 37 18	10	Flood	19	0	5.47	100
1247	11.11	100 feet southwest of Deer Is light		Lat 48 30 25 Long 70 37 18	20	Flood	19	6	5.32	100
1248	11.12	100 feet southwest of Deer Is light		Lat 48 30 25 Long 70 37 18	40	Flood	19	6	5.32	100
1249	5.46	100 feet south of Deer Is light		Lat 48 30 25 Long 70 37 17	Surface Flood		19.8	20	4.87	90
1250	5.48	100 feet south of Deer Is light		Lat 48 30 25 Long 70 37 17	1	Flood	19.8	20	4.87	90
1251	5.50	100 feet south of Deer Is light		Lat 48 30 25 Long 70 37 17	2	Flood	19	12	5.14	96
1252	5.52	100 feet south of Deer Is light		Lat 48 30 25 Long 70 37 17	3	Flood	19	6	5.42	100
1253	5.54	100 feet south of Deer Is light		Lat 48 30 25 Long 70 37 17	5	Flood	19	6	5.40	100
1254	5.56	100 feet south of Deer Is light		Lat 48 30 25 Long 70 37 17	10	Flood	19	6	5.40	100
1255	5.58	100 feet south of Deer Is light		Lat 48 30 25 Long 70 37 17	20	Flood	19	6	5.32	100
1256	4.00	100 feet south of Deer Is light		Lat 48 30 25 Long 70 37 17	60	Flood	19	6	5.32	100

High water at Boston 9.00 a.m. Discolored oxygen Boston water harbor off Fiddlers Island September 8, 1887

Sample No	Hour	Location of Sample	Approximate	Depth in fathoms	Tidal current	Temp. water	Percent water per surface	Oxygen
1287	1.30	About 1/4 mile north of west extremity of Fiddlers' Is.		Lat 42 17 29 Long 70 57 04	ebb	19	26	4.88 86
1288	1.32	"		Lat 42 17 29 Long 70 57 04	ebb	19	16	4.93 86
1289	1.34	"		Lat 42 17 29 Long 70 57 04	ebb	19	24	5.11 90
1290	1.36	"		Lat 42 17 29 Long 70 57 04	ebb	19	10	5.27 96
1291	1.38	"		Lat 42 17 29 Long 70 57 04	ebb	19	6	5.37 96
1292	1.40	"		Lat 42 17 29 Long 70 57 04	ebb	19	6	5.47 99
1293	1.42	"		Lat 42 17 29 Long 70 57 04	ebb	19	6	5.56 100
1294	1.44	"		Lat 42 17 29 Long 70 57 04	ebb	19	6	5.66 100
1295	2.00	Just south of Sunken ledge harbor off Fiddlers' Is		Lat 42 17 29 Long 70 57 04	ebb	19	8	5.82 100
1296	2.02	"		Lat 42 17 29 Long 70 57 04	ebb	19	8	5.90 100
1297	2.04	"		Lat 42 17 29 Long 70 57 04	ebb	19	8	5.94 100
1298	2.06	"		Lat 42 17 29 Long 70 57 04	ebb	19	8	5.94 100
1299	2.08	"		Lat 42 17 29 Long 70 57 04	ebb	19	8	5.94 100
1300	2.00	"		Lat 42 17 29 Long 70 57 04	ebb	19	8	5.94 100
1301	2.02	"		Lat 42 17 29 Long 70 57 04	ebb	19	8	5.94 100

Dissolved Oxygen.

Boston outer harbor off Moon Head

September 6, 1911

High water at Boston 9.50 a.m.

Sample No	Hour S.M.	Location of Samples		Exact 0 "	Feet below surface	Tidal current	Temp. water Deg C	Percent oxygen land water saturation	
		Approximate							
1272	11.00	1000 feet north of Moon Head	Lat 42 18 28	Surface	Ebb	18.5	18	4.26	73
		sewer outlet	Long 70 59 30						
1273	11.02	"	Lat 42 18 28	1	Ebb	18.5	18	4.35	75
		"	Long 70 59 20						
1274	11.04	"	Lat 42 18 28	2	Ebb	18.5	14	5.11	90
		"	Long 70 59 20						
1275	11.06	"	Lat 42 18 28	3	Ebb	18.5	12	5.33	95
		"	Long 70 59 20						
1276	11.08	"	Lat 42 18 28	5	Ebb	18.5	10	5.47	98
		"	Long 70 59 30						
1277	11.10	"	Lat 42 18 28	10	Ebb	18.5	8	5.54	99
		"	Long 70 59 30						
1278	11.12	"	Lat 42 18 28	15	Ebb	18.5	6	5.65	100
		"	Long 70 59 30						
1279	12.10	Near red buoy S6 north of Spectacle Is. Buoy about 3/4 mile north of Moon Head outlet	Lat 42 19 06	Surface	Ebb	18.5	8	5.60	100
		"	Long 70 59 15						
1280	12.12	"	Lat 42 19 06	1	Ebb	18.5	8	5.62	100
		"	Long 70 59 15						
1281	12.14	"	Lat 42 19 06	2	Ebb	18.5	6	5.65	100
		"	Long 70 59 15						
1282	12.16	"	Lat 42 19 06	5	Ebb	18.5	6	5.65	100
		"	Long 70 59 15						
1283	12.18	"	Lat 42 19 06	5	Ebb	18.5	6	5.66	100
		"	Long 70 59 15						
1284	12.20	"	Lat 42 19 06	10	Ebb	18.5	5	5.68	100
		"	Long 70 59 15						
1285	12.22	"	Lat 42 19 06	20	Ebb	18.5	5	5.68	100
		"	Long 70 59 15						

Ex. 94. P.110

Dissolved Oxygen.

Boston outer harbor off Peddocks Island.

September 7, 1911.

High water at Boston at 10.28 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact O.	Feet below surface	Tidal Temp. current	Temp. water cent Deg. C	Oxygen	
		Approximate						per land saturation	per litre water
1286	10.36	About 1/4 mile north of western extremity of Peddocks Island.	Lat 42 17 39 Long 70 57 04	Surface	Ebb	17	16	4.83	85
1287	10.38	"	Lat 42 17 39 Long 70 57 04	1	Ebb	17	16	4.93	85
1288	10.40	"	Lat 42 17 39 Long 70 57 04	2	Ebb	17	14	5.07	88
1289	10.42	"	Lat 42 17 39 Long 70 57 04	3	Ebb	17	8	5.56	98
1290	10.44	"	Lat 42 17 39 Long 70 57 04	5	Ebb	17	8	5.56	96
1291	10.46	"	Lat 42 17 39 Long 70 57 04	10	Ebb	17	6	5.65	100
1292	10.48	"	Lat 42 17 39 Long 70 57 04	15	Ebb	17	4	5.68	100
1293	10.50	"	Lat 42 17 39 Long 70 57 04	35	Ebb	17	4	5.68	100

Ex. 94. P.111

Disolved Oxygen. Boston outer harbor off Moon Head. September 7, 1911.

High water at Boston at 10.28 a.m.

Sample No.	Hour a.m.	Location of Samples		Tidal cur- rent	Temp. Deg.	Temp. Cent.	Per- cent	Oxygen per litre	Percent saturation
		Approximate	Exact						
1894	11.20	500 feet north of sewer outlet at northwest corner of Moon Head.	Lat 42 18 33 Long 70 59 29	1	Ebb	17	8	5.68	100
1898	11.22	500 feet north of sewer outlet at northwest corner of Moon Head.	Lat 42 18 33 Long 70 59 29	20	Ebb	17	4	5.68	100
1896	12.18	"	Lat 42 18 33 Long 70 59 29	Surface	Ebb	17	20	3.98	68
1897	12.20	"	Lat 42 18 33 Long 70 59 29	1	Ebb	17	20	3.98	68
1898	12.22	"	Lat 42 18 33 Long 70 59 29	2	Ebb	17	14	4.49	78
1899	12.24	"	Lat 42 18 33 Long 70 59 29	3	Ebb	17	12	5.00	88
1900	12.26	"	Lat 42 18 33 Long 70 59 29	5	Ebb	17	12	5.37	94
1901	12.28	"	Lat 42 18 33 Long 70 59 29	10	Ebb	17	10	5.52	97
1902	12.30	"	Lat 42 18 33 Long 70 59 29	20	Ebb	17	8	5.68	100

Ex. 94. p.112

Charles River at Boston. September 8, 1911.

Dissolved Oxygen.

High water at Boston at 11.06 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact 0' "	Feet below surface	Tidal Temp		Per- cent deg. C	Per- cent deg. F	Oxygen present at surface
		Approximate				cur- rent	water			
1303	10.00	Charles river, midway between mouth and lowest drawbridge	Lat 42 12 15 Long 71 03 19	15	Surface	Flood	17	28	2.55	43
1304	10.08	Charles river, midway between mouth and lowest drawbridge	Lat 42 12 15 Long 71 03 18	15	20	Flood	17	28	3.69	64

Ex. 94. p.117

Dissolved Oxygen.

Boston outer harbor off Peddocks Island.

September 9, 1911.

High water at Boston at 11.45 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact O. I. " surface	Feet below	Tidal Temp. cur- rent	Per- cent water Deg. C	Oxygen U.C. - percent per saturation
		Approximate						
1305	10.30	About 1/4 mile north of west ity of Peddocks Island	extrem- Lat 42 17 39	Surface	Flood	17	0	5.67 100
1306	10.32	About 1/4 mile north of west ity of Peddocks Island	extrem- Lat 42 17 39	1	Flood	17	0	5.67 100
1307	10.34	About 1/4 mile north of west ity of Peddocks Island	extrem- Lat 42 17 39	2	Flood	17	0	5.67 100
1308	10.36	About 1/4 mile north of west ity of Peddocks Island	extrem- Lat 42 17 39	3	Flood	17	1	5.68 100
1309	10.38	About 1/4 mile north of west ity of Peddocks Island	extrem- Lat 42 17 39	4	Flood	17	0	5.68 100
1310	10.40	About 1/4 mile north of west ity of Peddocks Island	extrem- Lat 42 17 39	10	Flood	17	0	5.68 100
1311	10.42	About 1/4 mile north of west ity of Peddocks Island	extrem- Lat 42 17 39	15	Flood	17	0	5.70 100
1312	10.44	About 1/4 mile north of west ity of Peddocks Island	extrem- Lat 42 17 39	20	Flood	17	0	5.70 100

Ex. 94. p.114

Disolved Oxygen.

Boston outer Harbor off Pelee's Island,
September 13, 1913.

High water at Boston at 1.00 p.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Exact	Feet below surface	Tidal stage	Temp. water cent	Per cent water per cubic foot	Oxygen per cubic foot
1213	10.00	About 1/4 mile north of west end of Pelee's Island		Lat 42 17 39 Long 70 57 14	Surface	Flood	17	14	4.83
1214	10.08	About 1/4 mile north of west end of Pelee's Island		Lat 42 17 39 Long 70 57 14	1	Flood	17	14	4.83
1215	10.04	About 1/4 mile north of west end of Pelee's Island		Lat 42 17 39 Long 70 57 14	2	Flood	17	14	4.98
1216	10.06	About 1/4 mile north of west end of Pelee's Island		Lat 42 17 39 Long 70 57 14	3	Flood	17	13	5.02
1217	10.08	About 1/4 mile north of west end of Pelee's Island		Lat 42 17 39 Long 70 57 14	6	Flood	17	13	5.27
1218	10.10	About 1/4 mile north of west end of Pelee's Island		Lat 42 17 39 Long 70 57 14	10	Flood	17	10	5.40
1219	10.12	About 1/4 mile north of west end of Pelee's Island		Lat 42 17 39 Long 70 57 14	15	Flood	17	10	5.56
1220	10.14	About 1/4 mile north of west end of Pelee's Island		Lat 42 17 39 Long 70 57 14	20	Flood	17	8	4.70

Ms. 94, p. 216

Dissolved Oxygen. Boston outer harbor off Peddocks island. About 2 mile north of west end of Peddocks island. Over outlet, which discharges 30' below surface. Sept. 12, 1911

High water occurred at Boston 1.50 P.M.

Sample No.	Hour a.m.	Location of Samples		Tidal Temp. Per- cent	Per- cent	Oxygen per litre	Oxygen per litre
		Approximate	Exact	rent	water	saturation	tion
1842	9.40 a.m.	About 1/2 mile north of west end of Peddocks Is. over outlet, which discharges 30' below surface	Lat 42 17 39 Long 70 57 04	Flood 17	12	5.19	89
1843	9.42 "	"	Lat 42 17 39 Long 70 57 04	Flood 17	12	5.18	89
1844	9.44 "	"	Lat 42 17 39 Long 70 57 04	Flood 17	12	5.22	90
1845	9.46 "	"	Lat 42 17 39 Long 70 57 04	Flood 17	10	5.37	94
1846	9.48 "	"	Lat 42 17 39 Long 70 57 04	Flood 17	10	5.40	95
1847	9.50 "	"	Lat 42 17 39 Long 70 57 04	Flood 17	9	5.52	97
1848	9.52 "	"	Lat 42 17 39 Long 70 57 04	Flood 17	8	5.56	98
1849	9.54 "	"	Lat 42 17 39 Long 70 57 04	Flood 17	6	5.74	100
1850	10.50	Near sunken ledge Beacon mile west of Peddocks Is. outlet	Lat 42 17 32 Long 70 57 37	Flood 17	8	5.68	100
1851	10.52	"	Lat 42 17 32 Long 70 57 37	Flood 17	8	5.68	100
1852	10.54	"	Lat 42 17 32 Long 70 57 37	Flood 17	8	5.68	100
1853	10.56	"	Lat 42 17 32 Long 70 57 37	Flood 17	6	5.70	100
1854	10.58	"	Lat 42 17 32 Long 70 57 37	Flood 17	6	5.73	100
1855	11.00	"	Lat 42 17 32 Long 70 57 37	Flood 17	6	5.74	100

Ex. 94, p.118

Dissolved Oxygen.

Boston outer harbor off Peddocks Island.

(continued)

Sept. 12, 1911.

Sample No.	Hour a.m.	Location of Samples		Exact O.	Feet below surface	Tidal Temp our- rent deg.C	Per- cent land water	Oxygen C.C. Percent per satura- tion
		Approximate						
1357	11.02 a.m.	near Sunken Ledge beacon 1/2 mile west of Peddocks Is. outlet	Lat 42 17 32 Long 70 57 37	15	Flood 17	6		5.74 100
1367	11.50	1/2 mile east of Peddocks Is. outlet	Lat 42 17 44 Long 70 56 20	surface	Flood 17	8		5.68 100
1368	11.52	" "	Lat 42 17 44 Long 70 56 30	1	Flood 17	8		5.68 100
1359	11.54	" "	Lat 42 17 44 Long 70 56 30	2	Flood 17	8		5.68 100
1360	11.56	" "	Lat 42 17 44 Long 70 56 30	3	Flood 17	6		5.70 100
1361	11.58	" "	Lat 42 17 44 Long 70 56 30	5	Flood 17	6		5.74 100
1362	12.00	" "	Lat 42 17 44 Long 70 56 30	10	Flood 17	6		5.74 100
1363	12.02	" "	Lat 42 17 44 Long 70 56 30	15	Flood 17	6		5.74 100
1364	2.00 p.m.	About 1/2 mile north of west end of Peddocks Is. over outlet, discharging 30' below surface	Lat 42 17 39 Long 70 57 04	surface	Ebb 17	14		4.92 85
1365	2.02	" "	Lat 42 17 39 Long 70 57 04	1	Ebb 17	14		4.92 85
1366	2.04	" "	Lat 42 17 39 Long 70 57 04	2	Ebb 17	14		4.93 86
1367	2.06	" "	Lat 42 17 39 Long 70 57 04	3	Ebb 17	12		5.07 89
1368	2.08	" "	Lat 42 17 39 Long 70 57 04	5	Ebb 17	10		5.22 92
1369	2.10	" "	Lat 42 17 39 Long 70 57 04	10	Ebb 17	8		5.28 93
1370	2.12	" "	Lat 42 17 39 Long 70 57 04	15	Ebb 17	6		5.42 95
1371	2.14	" "	Lat 42 17 39 Long 70 57 04	35	Ebb 17			5.65 99

Charles River, Boston. September 15, 1911.

Dissolved Oxygen.

High water at Boston at 2.57 P.M.

Sample No.	Hour a.m.	Location of Samples Approximate	Tidal Temp		Feet below surface	Exact	Tidal Temp		Oxygen
			air	water			air	water	
			Fath	Deg. C			Fath	Deg. C	per cent
1372	9.50	Charles river, midway between mouth and lowest bridge	Lat 42 22 15 Long 71 05 18	1	Flood	15	26	3.77	64
1373	9.54	"	Lat 42 22 15 Long 71 05 18	20	Flood	16.8	12	3.77	66

Ex. 94, p.180

Dissolved Oxygen.

Boston outer harbor off Peddocks Island.

September 14, 1911.

High water at Boston at 3.29 P.M.

Sample No.	Hour S.M.	Location of Samples		Exact O	Feet below surface	Tidal Temp. current Deg.C	Per cent water	Oxygen	
		Approximate						per litre	per saturation
1374	10.16	About 1/4 mile north of west end of Peddocks Island	Lat 42 17 39 Long 70 57 04	0	Surface Flood	18.8	14	5.19	88
1375	10.16	" " " "	Lat 42 17 39 Long 70 57 04	1	Flood	18.8	14	5.19	89
1376	10.16	" " " "	Lat 42 17 39 Long 70 57 04	2	Flood	18.8	14	5.22	89
1377	10.20	" " " "	Lat 42 17 39 Long 70 57 04	3	Flood	18.8	12	5.37	93
1378	10.22	" " " "	Lat 42 17 39 Long 70 57 04	5	Flood	18.5	12	5.40	96
1379	10.24	" " " "	Lat 42 17 39 Long 70 57 04	10	Flood	18.5	10	5.52	97
1380	10.26	" " " "	Lat 42 17 39 Long 70 57 04	15	Flood	18.5	10	5.56	98
1381	10.28	" " " "	Lat 42 17 39 Long 70 57 04	35	Flood	18.5	8	5.74	94
1382	11.00	Half-way between outlet and west end of Peddocks Island	Lat 42 17 32 Long 70 57 02	Surface Flood	Flood	18.5	12	5.46	94
1383	11.02	" " " "	Lat 42 17 32 Long 70 57 02	1	Flood	18.5	12	5.46	94
1384	11.04	" " " "	Lat 42 17 32 Long 70 57 02	2	Flood	18.5	12	5.46	94
1385	11.06	" " " "	Lat 42 17 32 Long 70 57 02	5	Flood	18.5	10	5.56	96
1386	11.08	" " " "	Lat 42 17 32 Long 70 57 02	5	Flood	18.5	10	5.56	96
1387	11.10	" " " "	Lat 42 17 32 Long 70 57 02	10	Flood	18.5	8	5.68	96

Dissolved Oxygen.

Boston outer harbor off Peddocks Island.

(Continued.) September 14, 1911.

Sample No.	Hour a.m.	Location of Sample	Approximate	Exact	Feet below surface	Tidal current per cent	Temp. water per cent	Per cent	Oxygen
1388	11.18	Half-way between outlet and west end of Peddocks Island		Lat 42 17 23 Long 70 57 02	18	Flood 18.6	6	8.80	100
1389	11.14			Lat 42 17 22 Long 70 57 08	25	Flood 18.6	6	8.80	100
1390	11.50	About 1/4 mile west of west end of Peddocks Island		Lat 42 19 25 Long 70 57 18	Surface	Flood 18.6	6	8.60	97
1391	11.52			Lat 42 17 22 Long 70 57 18	1	Flood 18.6	6	8.60	97
1392	11.54			Lat 42 17 22 Long 70 57 18	2	Flood 18.6	6	8.60	97
1393	11.54			Lat 42 17 22 Long 70 57 18	3	Flood 18.6	6	8.60	96
1394	11.56			Lat 42 17 22 Long 70 57 18	8	Flood 18.6	6	8.60	96
1395	12.00			Lat 42 17 22 Long 70 57 18	10	Flood 18.6	6	8.60	96
1396	12.02			Lat 42 17 22 Long 70 57 18	18	Flood 18.6	6	8.55	96
1397	12.04			Lat 42 17 22 Long 70 57 18	25	Flood 18.6	6	8.65	96
1398	1.00	1/2 mile S. W. of outlet		Lat 42 17 16 Long 70 57 22	Surface	Flood 18.6	6	8.60	97
1399	1.01			Lat 42 17 16 Long 70 57 22	1	Flood 18.6	6	8.60	97
1400	1.03			Lat 42 17 16 Long 70 57 22	2	Flood 18.6	6	8.60	97
1401	1.05			Lat 42 17 16 Long 70 57 22	3	Flood 18.6	6	8.68	99

Es. 94, p. 122

Dissolved Oxygen.
 Boston outer harbor off Peddocks Island.
 (Continued.) September 16, 1911.

Sample No.	Hour P.M.	Location of Sample Approximate	Depth feet below surface	Tidal stage out- rent	Temp. Deg. C	Per- cent saturation	Oxygen C.C. per liter
1402	1.09	1/8 mile S. W. of outlet	Lat 42 17 16 Long 70 57 22	8	Flood 18.8	6	8.60 90
1403	1.09	" " " "	Lat 42 17 16 Long 70 57 22	10	Flood 18.8	6	8.60 90
1404	1.11	" " " "	Lat 42 17 16 Long 70 57 22	18	Flood 18.8	6	8.84 90
1405	1.15	" " " "	Lat 42 17 16 Long 70 57 22	20	Flood 18.8	6	8.82 90
1406	2.00	By black buoy S. between Long Is. and Seaboard Is.	Lat 42 19 04 Long 70 56 18	1	Flood 18.8	6	8.74 100
1407	2.02	" " " "	Lat 42 19 04 Long 70 56 18	16	Flood 18.8	4	8.94 100
1408	2.04	" " " "	Lat 42 19 04 Long 70 56 18	30	Flood 18.8	4	8.94 100
1409	2.30	Cove north of middle of Peddocks Is. 1000' off shore	Lat 42 17 45 Long 70 56 22	1	Flood 18.8	6	8.81 97
1410	2.32	" " " "	Lat 42 17 45 Long 70 56 22	20	Flood 18.8	4	8.81 97
1411	2.34	" " " "	Lat 42 17 45 Long 70 56 22	28	Flood 18.8	4	8.81 97
1412	4.00	About 1/4 mile S. of west end of Peddocks Island	Lat 42 19 39 Long 70 57 04	1	Flood 18.8	14	4.39 63
1413	4.04	" " " "	Lat 42 19 39 Long 70 57 04	20	Flood 18.8	6	8.80 100

Ex. 94, p. 115

High water at Boston at 3.22 p.m.
 Dissolved Oxygen.
 Boston outer harbor off Moon Island.
 September 14, 1911.

Sample No.	Hour p.m.	Location of Samples		Exact " "	Feet below surface	Tidal current	Temp. air- water Deg. C	Per- cent land water	Oxygen per natu- ra- tion
		Approximate							
1414	5.00	Midway between Moon Head outlet and East end of Spectacle Is.	Lat	42 18 52	Surface	Ebb	15.5	18	3.98
1415	5.02	"	Long	70 59 17	"	"	"	"	"
1416	5.04	"	Lat	42 18 52	1	Ebb	15.5	18	3.98
1417	5.06	"	Long	70 59 17	2	Ebb	15.5	14	4.11
1418	5.08	"	Lat	42 18 52	3	Ebb	15.5	12	4.20
1419	5.10	"	Long	70 59 17	5	Ebb	15.5	10	5.22
1420	5.12	"	Lat	42 18 52	10	Ebb	15.5	6	5.52
1421	5.30	By buoy S. 4 off west end of Long Island	Lat	42 18 34	15	Ebb	15.5	4	5.69
1422	5.32	"	Long	70 58 46	Surface	Ebb	15.5	15	4.26
1423	5.34	"	Lat	42 18 34	1	Ebb	15.5	16	4.26
1424	5.36	"	Long	70 58 46	2	Ebb	15.5	14	4.64
1425	5.38	"	Lat	42 18 34	3	Ebb	15.5	12	5.00
1426	5.40	"	Long	70 58 46	5	Ebb	15.5	10	5.51
1427	5.42	"	Lat	42 18 34	10	Ebb	15.5	6	5.68
		"	Long	70 58 46	15	Ebb	15.5	4	5.68

Dissolved Oxygen.

Boston outer harbor off Moon Head. Sept. 14, 1911.

Sample No.	Hour P.M.	Location of Samples		Exact O.	Feet below surface	Tidal Temp. current		Per- cent Deg.C	Per- cent land water	Oxygen saturation
		Approximate				rent	rent			
1428	6.04	By buoy S. 2. south of west		Lat 42 18 30	Surface	Ebb	15.5	8	5.54	96
		" " end of Long Island "		Long 70 58 27						
1429	6.06	" " " "		Lat 42 18 30	1	Ebb	15.5	8	5.54	96
		" " " "		Long 70 58 27						
1430	6.08	" " " "		Lat 42 18 30	2	Ebb	15.5	6	5.54	96
		" " " "		Long 70 58 27						
1431	6.10	" " " "		Lat 42 18 30	3	Ebb	15.5	6	5.60	98
		" " " "		Long 70 58 27						
1432	6.12	" " " "		Lat 42 18 30	5	Ebb	15.5	6	5.56	97
		" " " "		Long 70 58 27						
1433	6.14	" " " "		Lat 42 18 30	10	Ebb	15.5	4	5.46	96
		" " " "		Long 70 58 27						
1434	6.16	" " " "		Lat 42 18 30	20	Ebb	15.5	4	5.46	96
		" " " "		Long 70 58 27						

Ex. 94. p.125

Dissolved Oxygen.

Boston outer harbor off Peddocks Island.

September 15, 1911.

High water at Boston at 4.26 P.M.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water cent.	Per cent Deg. C land water	Oxygen	
		Approximate	Lat					per litre	saturation
1435	10.30	About 1/4 mile north of west end of Peddocks Island, over outlet	Lat 42 17 39 Long 70 57 04	1	Flood	15.5	14	5.19	88
1436	10.32	" " " " " "	Lat 42 17 39 Long 70 57 04	2	Flood	15.5	14	5.22	89
1437	10.34	" " " " " "	Lat 42 17 39 Long 70 57 04	3	Flood	15.5	12	5.37	93
1438	10.36	" " " " " "	Lat 42 17 39 Long 70 57 04	5	Flood	15.5	10	5.54	96
1439	10.38	" " " " " "	Lat 42 17 39 Long 70 57 04	10	Flood	15.5	10	5.52	96
1440	10.40	" " " " " "	Lat 42 17 39 Long 70 57 04	15	Flood	15.5	8	5.56	97
1441	10.42	" " " " " "	Lat 42 17 39 Long 70 57 04	30	Flood	15.5	6	5.74	99
1442	10.44	" " " " " "	Lat 42 17 39 Long 70 57 04						

Ex. 94. p.126

Dissolved Oxygen. Boston enter harbor off Moon Head. Sept. 15, 1911.
High water at Boston at 4.26 P.M.

Sample No.	Hour a.m.	Location of Sample		Lat	Long	Tidal current	Tidal Temp water cent. Deg. C	Per cent lead water	Oxygen per saturation
		Approximate	Exact						
1443	11.30	1000 feet north of Moon Head	Lat 42 18 36	Surface	Flood	15.5	6	5.68	100
1444	11.32	" " " outlet "	Long 70 59 30	1	Flood	15.5	6	5.68	100
1445	11.34	" " "	Lat 42 18 36	2	Flood	15.5	6	5.68	100
1446	11.36	" " "	Long 70 59 30	3	Flood	15.5	6	5.70	100
1447	11.38	" " "	Lat 42 18 36	5	Flood	15.5	4	5.70	100
1448	11.40	" " "	Long 70 59 30	10	Flood	15.5	4	5.74	100
1449	11.42	" " "	Lat 42 18 36	15	Flood	15.5	4	5.74	100
			Long 70 59 30						

Ex. 94. p. 127

ROMION Outer Harbor off Moon Head about
1 mile S. of Moon Head about
1 mile S. of west end of Long Island.

Direction of current.

High water occurred at Boston at 7.17 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact Time	Feet below surface	Tidal Temp. Sur- face	Per- cent water	Per- cent land	Per- cent saturation	Oxygen per saturation
		Approximate								
1450	9.15	About 1 mile S.E. of Moon Head outlet and 1 mile S. of west end of Long Is.	Lat 42 18 02 Long 70 56 27	surface	15.5	6	5.07	88		
1451	9.17	"	Lat 42 18 02 Long 70 56 27	1	15.5	6	5.07	88		
1452	9.19	"	Lat 42 18 02 Long 70 56 27	2	15.5	6	5.11	89		
1453	9.21	"	Lat 42 18 02 Long 70 56 27	3	15.5	6	5.11	89		
1454	9.23	"	Lat 42 18 02 Long 70 56 27	5	15.5	6	5.11	89		
1455	9.25	"	Lat 42 18 02 Long 70 56 27	10	15.5	6	5.00	86		
1456	9.27	"	Lat 42 18 02 Long 70 56 27	15	15.5	6	5.00	86		
1457	9.50	"	Lat 42 18 02 Long 70 56 27	surface	15.5	14	4.40	75		
1458	9.52	"	Lat 42 18 02 Long 70 56 27	1	15.5	14	4.40	75		
1459	9.54	"	Lat 42 18 02 Long 70 56 27	2	15.5	12	4.78	82		
1460	9.56	"	Lat 42 18 02 Long 70 56 27	3	15.5	10	5.14	89		
1461	9.58	"	Lat 42 18 02 Long 70 56 27	5	15.5	10	5.21	97		
1462	10.00	"	Lat 42 18 02 Long 70 56 27	10	15.5	6	5.66	103		
1463	10.02	"	Lat 42 18 02 Long 70 56 27	15	15.5	6	5.70	100		

Ex. 94. p. 126

Resolved Oxygen. Station enter Harbor off Moon Head (continued)

Sample No.	Hour a.m.	Location of Sample	Approximate	Exact	Feet below surface	Tidal stage	Temp. air	Temp. water	Per cent perature	C.C. per litre	Oxygen
1464	10.28	1000' North of Moon Head		Lat 42 18 30 Long 70 59 50	surface	ebb	18.8	18	5.90	60	60
1465	10.29	" "	" "	Lat 42 18 30 Long 70 59 50	1	ebb	18.8	18	5.90	60	60
1466	10.29	" "	" "	Lat 42 18 30 Long 70 59 50	8	ebb	18.8	14	6.05	74	74
1467	10.31	" "	" "	Lat 42 18 30 Long 70 59 50	8	ebb	18.8	12	4.90	66	66
1468	10.38	" "	" "	Lat 42 18 30 Long 70 59 50	8	ebb	18.8	10	5.28	97	97
1469	10.38	" "	" "	Lat 42 18 30 Long 70 59 50	10	ebb	18.8	8	5.60	97	97
1470	10.39	" "	" "	Lat 42 18 30 Long 70 59 50	18	ebb	18.8	8	5.60	98	98
1471	11.00	About 1/2 mile S of location of samples 1464-68, which were taken near S. edge of discolorated field		Lat 42 17 50 Long 70 59 50	surface	ebb	18.8	6	5.60	99	99
1472	11.08	" "	" "	Lat 42 17 50 Long 70 59 50	10	ebb	18.8	6	5.60	98	98
1473	11.04	" "	" "	Lat 42 17 50 Long 70 59 50	18	ebb	18.8	6	5.60	97	97

Ex. 96, p. 129

Sept. 26, 1911.

Barograph station on between Forts Lafayette and Wallerworth.

Low water occurred at Governors Island at 4.17 a.m. High water at 10.36 a.m. Low water at 4.07 p.m. Flood currents began about 9 a.m.

Sample No.	Hour a.m.	Approximate Location of Sample	Depth fathoms	Wind direction	Wind force	Barometer	Thermometer	Direction of surface current	Force of surface current	Direction of bottom current	Force of bottom current	Direction of drift	Force of drift
1474	6.30	800 feet off Fort Lafayette	Lat	40 25 39	1	Black 20.	30	Black 20.	30	Black 20.	30	Black 20.	30
1475	6.32	800 feet off Fort Lafayette	Long	74 02 34	20	Black 20.	34	Black 20.	34	Black 20.	34	Black 20.	34
1476	6.34	800 feet off Fort Lafayette	Lat	40 25 39	40	Black 20.	34	Black 20.	34	Black 20.	34	Black 20.	34
1477	6.39	1/4 way across from Port Lafayette	Long	74 02 34	1	Black 20.	30	Black 20.	30	Black 20.	30	Black 20.	30
1478	6.43	1/4 way across from Port Lafayette	Lat	40 25 39	40	Black 20.	34	Black 20.	34	Black 20.	34	Black 20.	34
1479	6.45	1/4 way across from Port Lafayette	Long	74 02 34	80	Black 20.	34	Black 20.	34	Black 20.	34	Black 20.	34
1480	6.48	Half way across	Lat	40 25 39	1	Black 20.	30	Black 20.	30	Black 20.	30	Black 20.	30
1481	6.50	Half way across	Long	74 02 34	40	Black 20.	34	Black 20.	34	Black 20.	34	Black 20.	34
1482	6.52	Half way across	Lat	40 25 39	80	Black 20.	34	Black 20.	34	Black 20.	34	Black 20.	34
1483	6.57	3/4 way across from Port Lafayette	Long	74 02 34	1	Black 20.	30	Black 20.	30	Black 20.	30	Black 20.	30
1484	6.59	3/4 way across from Port Lafayette	Lat	40 25 39	40	Black 20.	34	Black 20.	34	Black 20.	34	Black 20.	34
1485	7.01	3/4 way across from Port Lafayette	Long	74 02 34	80	Black 20.	34	Black 20.	34	Black 20.	34	Black 20.	34
1486	7.06	800 feet off Fort Wallerworth	Lat	40 25 39	1	Flood 20.	30	Flood 20.	30	Flood 20.	30	Flood 20.	30
1487	7.08	800 feet off Fort Wallerworth	Long	74 02 34	20	Flood 20.	34	Flood 20.	34	Flood 20.	34	Flood 20.	34
1488	7.10	800 feet off Fort Wallerworth	Lat	40 25 39	40	Flood 20.	34	Flood 20.	34	Flood 20.	34	Flood 20.	34

Low water occurred at Governors Island at 4.17 a.m. High water at 10.23 a.m. Low water at 4.57 p.m.

Flood currents began about 7 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact o ' "	Feet below surface	Tidal current rent	Temp. water Deg.C	Per- cent load	O.C. per saturation
		Approximate							
1489	8.30	200 feet off Port Lafayette	Lat	40 36 29	1	Flood	20	26	4.65
			Long	74 02 24					83
1490	8.32	" " "	Lat	40 36 29	20	Flood	20	20	4.94
			Long	74 02 24					89
1491	8.34	" " "	Lat	40 36 29	40	Flood	20	20	4.94
			Long	74 02 24					89
1492	8.39	1/4 way across from Port Lafayette	Lat	40 36 27	1	Flood	20	26	4.76
			Long	74 02 34					85
1493	8.41	1/4 way across from Port Lafayette	Lat	40 36 27	40	Flood	20	20	5.04
			Long	74 02 34					91
1494	8.43	1/4 way across from Port Lafayette	Lat	40 36 27	80	Flood	20	20	5.04
			Long	74 02 34					91
1495	8.48	Half way across	Lat	40 36 25	1	Flood	20	26	4.78
			Long	74 02 48					85
1496	8.50	" " "	Lat	40 36 25	40	Flood	20	20	4.92
			Long	74 02 48					89
1497	8.52	" " "	Lat	40 36 25	80	Flood	20	20	4.92
			Long	74 02 48					89
1498	8.57	3/4 way across from Port Lafayette	Lat	40 36 23	1	Flood	20	26	4.83
			Long	74 03 02					86
1499	8.59	3/4 way across from Port Lafayette	Lat	40 36 23	40	Flood	20	20	5.00
			Long	74 03 02					90
1500	9.01	3/4 way across from Port Lafayette	Lat	40 36 23	80	Flood	20	20	5.00
			Long	74 03 02					90
1501	9.06	200 feet off Port Wadsworth	Lat	40 36 21	1	Flood	20	26	4.72
			Long	74 03 12					84
1502	9.08	" " "	Lat	40 36 21	30	Flood	20	20	5.00
			Long	74 03 12					90
1503	9.10	" " "	Lat	40 36 21	60	Flood	20	20	5.00
			Long	74 03 12					90

Dissolved Oxygen.

The Narrows-Cross-section between
Forts Lafayette and Wadsworth.

Sept. 26, 1911.

Low water occurred at Governors Island at 4.17 a.m. High water at 10.33 a.m. Low water at 4.57 p.m.
Flood currents began about 7 a.m.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. our- rent Deg.C	Per- cent water	Oxygen C.C. per land saturation
		Approximate	Exact O				
1504	10.30	200 feet off Fort Lafayette	Lat 40 36 29 Long 74 02 24	1	End of Flood	26	4.78 85
1505	10.32	" " "	Lat 40 35 29 Long 74 02 24	20	End of Flood	20	4.94 89
1506	10.34	" " "	Lat 40 36 29 Long 74 02 24	40	End of Flood	20	4.94 89
1507	10.39	1/4 way across from Fort Lafayette	Lat 40 36 27 Long 74 02 34	1	End of Flood	26	4.90 87
1508	10.41	1/4 way across from Fort Lafayette	Lat 40 36 27 Long 74 02 34	40	End of Flood	20	5.04 91
1509	10.43	1/4 way across from Fort Lafayette	Lat 40 36 27 Long 74 02 34	80	End of Flood	20	5.04 91
1510	10.48	Half way across	Lat 40 36 25 Long 74 02 48	1	End of Flood	26	4.92 86
1511	10.50	" " "	Lat 40 36 25 Long 74 02 48	40	End of Flood	20	4.92 89
1512	10.52	" " "	Lat 40 36 25 Long 74 02 48	80	End of Flood	20	4.92 89
1513	10.57	3/4 way across from Fort Lafayette	Lat 40 36 23 Long 74 03 02	1	End of Flood	26	5.00 89
1514	10.59	3/4 way across from Fort Lafayette	Lat 40 36 23 Long 74 03 02	40	End of Flood	20	5.00 90
1515	11.01	3/4 way across from Fort Lafayette	Lat 40 36 23 Long 74 03 02	80	End of Flood	20	5.00 90
1516	11.06	200 feet off Fort Wadsworth	Lat 40 36 21 Long 74 03 12	1	End of Flood	26	5.00 89
1517	11.08	" " "	Lat 40 36 21 Long 74 03 12	30	End of Flood	20	5.00 90
1518	11.10	" " "	Lat 40 36 21 Long 74 03 12	60	End of Flood	20	5.00 90

Dissolved Oxygen. The Narrows-Cross-section between
 Forts Lafayette and Madeworth. Sept. 26, 1911.
 Low water occurred at Governors Island at 4.17 a.m. High water at 10.53 a.m. Low water at 4.57 a.m.
 Flood currents ended about 12 noon. Ebb currents began about 12.30 p.m.

Sample No.	Hour P.M.	Location of Samples		Exact O' "	Feet below surface	Tidal cur- rent	Temp. Deg.C	Per- cent land water	Oxygen per saturation
		Approximate							
1519	12.30	200 feet off Fort Lafayette	Lat	40 36 39	1	Ebb	20	26	4.78 85
			Long	74 02 24					
1520	12.32	" " "	Lat	40 36 29	20	Ebb	20	20	4.78 86
			Long	74 02 24					
1521	12.34	" " "	Lat	40 36 23	40	Ebb	20	20	4.78 86
			Long	74 02 24					
1522	12.39	1/4 way across from Fort Lafayette	Lat	40 36 37	1	Ebb	30	26	4.90 87
			Long	74 02 24	40				
1523	12.41	1/4 way across from Fort Lafayette	Lat	40 36 37		Ebb	30	20	4.90 88
			Long	74 02 24					
1524	12.43	1/4 way across from Fort Lafayette	Lat	40 36 27	80	Ebb	20	20	4.90 88
			Long	74 02 24					
1525	12.48	Half way across Lafayette	Lat	40 36 25	1	Ebb	30	26	4.78 85
			Long	74 02 24					
1526	12.50	" " "	Lat	40 36 25	40	Ebb	30	20	4.92 89
			Long	74 02 24					
1527	12.52	" " "	Lat	40 36 25	80	Ebb	30	30	4.92 89
			Long	74 02 24					
1528	12.57	3/4 way across from Fort Lafayette	Lat	40 36 25	1	Ebb	20	26	4.85 85
			Long	74 02 24					
1529	12.59	3/4 way across from Fort Lafayette	Lat	40 36 23	40	Ebb	20	30	4.85 87
			Long	74 02 24					
1530	1.01	3/4 way across from Fort Lafayette	Lat	40 36 23	80	Ebb	30	20	4.85 87
			Long	74 02 24					
1531	1.06	200 feet off Fort Madeworth Lafayette	Lat	40 36 21	1	Ebb	20	26	4.72 86
			Long	74 02 12					
1532	1.08	" " "	Lat	40 36 21	40	Ebb	20	30	4.87 86
			Long	74 02 12					
1533	1.10	" " "	Lat	40 36 21	80	Ebb	20	20	4.87 86
			Long	74 02 12					

Dissolved Oxygen. The narrow cross-section between
 Porto Lafayette and Wadsworth. Sept. 26, 1911.
 Low water occurred at Governors Island at 4.14 a.m. High water at 10.23 a.m. Low water at
 4.57 p.m. Ebb currents began about 12.30 p.m.

Sample No.	Hour P.M.	Location of Samples		Tidal Temp. our- rent Deg.C	Per- cent land water	Oxygen Per- cent satura- tion				
		Approximate	Exact feet below surface							
1834	2.20	200 feet off Port Lafayette	Lat	40 36 29	1	25b	20	28	4.26	77
			Long	74 02 24						
1835	2.22	" " " "	Lat	40 36 29	20	25b	20	24	4.21	81
			Long	74 02 24						
1836	2.24	" " " "	Lat	40 36 29	40	25b	20	24	4.21	81
			Long	74 02 24						
1837	2.29	1/4 way across from Port Lafayette	Lat	40 36 27	1	25b	20	20	4.46	79
			Long	74 02 24						
1838	2.41	1/4 way across from Port Lafayette	Lat	40 36 27	40	25b	20	24	4.46	80
			Long	74 02 24						
1839	2.42	1/4 way across from Port Lafayette	Lat	40 36 27	80	25b	20	24	4.46	80
			Long	74 02 24						
1840	2.46	Half way across	Lat	40 36 25	1	25b	20	28	4.24	77
			Long	74 02 48						
1841	2.50	" " " "	Lat	40 36 25	40	25b	20	24	4.24	78
			Long	74 02 48						
1842	2.52	" " " "	Lat	40 36 25	80	25b	20	24	4.24	78
			Long	74 02 48						
1843	2.57	3/4 way across from Port Lafayette	Lat	40 36 23	1	25b	20	28	4.26	76
			Long	74 03 02						
1844	2.59	3/4 way across from Port Lafayette	Lat	40 36 23	40	25b	20	24	4.26	76
			Long	74 03 02						
1845	3.01	3/4 way across from Port Lafayette	Lat	40 36 23	80	25b	20	24	4.26	76
			Long	74 03 02						
1846	3.06	200 feet off Port Wadsworth	Lat	40 36 21	1	25b	20	26	4.21	77
			Long	74 03 12						
1847	3.08	" " " "	Lat	40 36 21	80	25b	20	24	4.21	77
			Long	74 03 12						
1848	3.10	" " " "	Lat	40 36 21	60	25b	20	24	4.21	77
			Long	74 03 12						

Dissolved Oxygen. The Narrows-Cross-section between
Port Jefferson and Wadsworth. Sept. 26, 1911.

Low water occurred at Governors Island at 4.17 a.m. High water at 10.33 a.m. Low water at 4.67 p.m. Ebb currents began about 12.30 p.m.

Sample No.	Hour P.M.	Location of Samples		Exact 5' 1" surface	Feet below surface	Tidal Temp. Per- cent water cent		Oxygen U.C. Percent per satu- ration
		Approximate				Deg.	F.	
1849	4.30	300 feet off Port Lafayette	Lat 40 26 29 Long 74 02 34	40 26 29	1	85b	20	30 3.96 70
1850	4.32	" " " "	Lat 40 26 29 Long 74 02 34	40 26 29	30	85b	20	28 3.96 70
1851	4.34	" " " "	Lat 40 26 29 Long 74 02 34	40 26 29	40	85b	20	28 3.96 70
1852	4.39	1/4 way across from Port Lafayette	Lat 40 26 27 Long 74 02 34	40 26 27	1	85b	20	30 4.06 72
1853	4.41	1/4 way across from Port Lafayette	Lat 40 26 27 Long 74 02 34	40 26 27	40	85b	20	28 4.06 72
1854	4.43	1/4 way across from Port Lafayette	Lat 40 26 27 Long 74 02 34	40 26 27	80	85b	20	28 4.06 72
1855	4.46	Half way across	Lat 40 26 25 Long 74 02 32	40 26 25	1	85b	20	28 4.06 72
1856	4.50	" " " "	Lat 40 26 25 Long 74 02 32	40 26 25	40	85b	20	28 4.06 72
1857	4.52	" " " "	Lat 40 26 25 Long 74 02 32	40 26 25	80	85b	20	28 4.06 72
1858	4.57	3/4 way across from Port Lafayette	Lat 40 26 23 Long 74 02 32	40 26 23	1	85b	20	28 3.98 70
1859	4.59	3/4 way across from Port Lafayette	Lat 40 26 23 Long 74 02 32	40 26 23	40	85b	20	26 3.98 71
1860	5.01	3/4 way across from Port Lafayette	Lat 40 26 23 Long 74 02 32	40 26 23	80	85b	20	26 3.98 71
1861	5.06	200 feet off Port Wadsworth	Lat 40 36 21 Long 74 03 12	40 36 21	1	85b	20	28 3.89 69
1862	5.09	" " " "	Lat 40 36 21 Long 74 03 12	40 36 21	30	85b	20	26 4.05 72
1863	5.10	" " " "	Lat 40 36 21 Long 74 03 12	40 36 21	60	85b	20	26 4.05 72

September 26, 1913.

The narrow cross-section between
Port Lafayette and Wading River.

Low water occurred at Governors Island at 4.17 A.M. High water at 10.53 A.M. Low water

at 4.57 P.M. Ebb currents began about 10.50 P.M. Ebb currents ended 9.50 P.M. (estimated.)

Sample No.	Hour P.M.	Location of Sample		East of 1	Feet below surface	Tidal Temp. Cor- rent		Per- cent land water	Depth percent surface water
		Approximate				rent	Deg. C		
1864	6.00	800 feet off Port Lafayette	Lat 40 56 19 Long 74 02 54		1	23b	20	80	2.69 65
1865	6.02	" " " "	Lat 40 56 19 Long 74 02 54		20	23b	20	20	2.82 68
1866	6.04	" " " "	Lat 40 56 19 Long 74 02 54		40	23b	20	20	2.82 68
1867	6.06	1/4 way across from Port " Lafayette	Lat 40 56 17 Long 74 02 54		1	23b	20	80	2.76 67
1868	6.10	" " " "	Lat 40 56 17 Long 74 02 54		40	23b	20	20	2.92 69
1869	6.12	" " " "	Lat 40 56 17 Long 74 02 54		80	23b	20	20	2.92 69
1870	6.16	Half way across	Lat 40 56 17 Long 74 02 54		1	23b	20	20	2.91 69
1871	6.18	" " " "	Lat 40 56 16 Long 74 02 49		40	23b	20	20	4.06 72
1872	6.20	" " " "	Lat 40 56 15 Long 74 02 49		80	23b	20	20	4.06 72
1873	6.24	3/4 way across from Port " Lafayette	Lat 40 56 13 Long 74 02 48		1	23b	20	20	2.84 68
1874	6.26	" " " "	Lat 40 56 12 Long 74 02 48		40	23b	20	20	2.88 71
1875	6.28	" " " "	Lat 40 56 12 Long 74 02 48		80	23b	20	20	2.88 71
1876	6.32	800 feet off Port Wading River	Lat 40 56 11 Long 74 02 48		1	23b	20	20	2.75 66
1877	6.34	" " " "	Lat 40 56 11 Long 74 02 48		20	23b	20	20	2.69 66
1878	6.36	" " " "	Lat 40 56 11 Long 74 02 48		40	23b	20	20	2.69 66
1879	6.38	" " " "	Lat 40 56 11 Long 74 02 48		80	23b	20	20	2.69 66

Ex. 56, p. 156

Dissolved Oxygen. Hudson River Cross-section between Pier A., Sept. 28, 1913.
New York and C.R.R. of N.J. Ferry, Jersey City.

Low water occurred at Governors Island at 6.07 a.m. High water at 12.12 p.m.

Low water at 6.07 p.m.

Sample No.	Hour A.M.	Location of Samples		Feet below surface	Tidal Temp. Fur- ther out rent Deg.C	Per- cent saturation	Oxygen C.C. per liter
		Approximate	Exact				
1879	6.30	200 feet off Pier A.	Lat 40 42 16 Long 74 01 10	1	8bb	48	3.01
1880	6.32	" " " "	Lat 40 42 16 Long 74 01 10	30	8bb	50	3.01
1881	6.34	" " " "	Lat 40 42 16 Long 74 01 10	40	8bb	54	3.01
1882	6.39	1/4 way across from Pier A.	Lat 40 42 17 Long 74 01 20	1	8bb	48	3.06
1883	6.41	" " " "	Lat 40 42 17 Long 74 01 20	30	8bb	50	3.06
1884	6.43	" " " "	Lat 40 42 17 Long 74 01 20	40	8bb	54	3.06
1885	6.48	Half way across	Lat 40 42 19 Long 74 01 34	1	8bb	48	3.19
1886	6.50	" " " "	Lat 40 42 19 Long 74 01 34	30	8bb	50	3.19
1887	6.52	" " " "	Lat 40 42 19 Long 74 01 34	40	8bb	56	3.19
1888	6.57	3/4 way across from Pier A.	Lat 40 42 21 Long 74 01 48	1	8bb	48	3.12
1889	6.59	" " " "	Lat 40 42 21 Long 74 01 48	30	8bb	54	3.12
1890	7.01	" " " "	Lat 40 42 21 Long 74 01 48	40	8bb	50	3.12
1891	7.06	500 feet off C.R.R. of N.J.	Lat 40 42 22 Long 74 01 59	1	8bb	42	3.06
1892	7.08	" " " "	Lat 40 42 22 Long 74 01 59	18	8bb	50	3.19
1893	7.10	" " " "	Lat 40 42 22 Long 74 01 59	26	8bb	50	3.19

Dissolved Oxygen. Hudson River Cross-section between Pier A, September 28, 1911.
New York and C.R.R. of N. J. ferry, Jersey City.
Low water occurred at Governors Island at 6.07 a.m. High water at 12.13 p.m. Low water
at 6.07 p.m. Ebb currents ended about 10 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact O. i.	Feet below surface	Tidal Temp cur- rent	Per- cent Deg.C	Oxygen	
		Approximate						land water	Percent saturation
1594	8.20	200 feet off Pier A.		Lat 40 42 16 Long 74 01 10	1	Ebb	20	44	2.73 47
1595	8.32	200 " " "		Lat 40 42 16 Long 74 01 10	20	Ebb	20	38	2.92 51
1596	8.34	200 " " "		Lat 40 42 16 Long 74 01 10	40	Ebb	20	38	2.92 51
1597	8.39	1/4 way across from Pier A.		Lat 40 42 17 Long 74 01 20	1	Ebb	20	44	2.94 50
1598	8.41	" " " "		Lat 40 42 17 Long 74 01 20	20	Ebb	20	40	2.94 51
1599	8.43	" " " "		Lat 40 42 17 Long 74 01 20	40	Ebb	20	38	2.94 51
1600	8.48	Half way across		Lat 40 42 19 Long 74 01 34	1	Ebb	20	46	3.04 52
1601	8.50	" " " "		Lat 40 42 19 Long 74 01 34	20	Ebb	20	42	3.04 52
1602	8.52	" " " "		Lat 40 42 19 Long 74 01 34	40	Ebb	20	40	3.04 52
1603	8.57	3/4 way across from Pier A.		Lat 40 42 21 Long 74 01 48	1	Ebb	20	46	3.00 51
1604	8.59	" " " "		Lat 40 42 21 Long 74 01 48	20	Ebb	20	42	3.12 54
1605	9.01	" " " "		Lat 40 42 21 Long 74 01 48	40	Ebb	20	40	3.12 54
1606	9.06	200 feet off C.R.R. of N.J. ferry		Lat 40 42 22 Long 74 01 59	1	Ebb	20	46	2.92 50
1607	9.08	" " " "		Lat 40 42 22 Long 74 01 59	15	Ebb	20	42	3.06 53
1608	9.10	" " " "		Lat 40 42 22 Long 74 01 59	25	Ebb	20	36	3.06 53

Dissolved Oxygen
Hudson River—Cross section between
Pier A, New York and C.R.R. of N.J. Ferry,
Jersey City

Sept. 28, 1911

Low water occurred at Governors Island at 6.07 a. m. High water at 12.15 p. m. Low water at 6.07 p. m.
Flood currents began about 10.30 a. m.

Sample No.	Hour a.m.	Location of Samples		Tidal current water Deg C	Temp. Percent water	Feet below surface	Exact O. %	Oxygen C.C. Percent per liter saturation
		Approximate						
1609	10.30	200 feet off Pier A	Lat 40 42 16 Long 74 01 10	1	Flood	20	38	2.87
1610	10.32	" " " "	Lat 40 42 16 Long 74 01 10	20	Flood	20	34	3.01
1611	10.34	" " " "	Lat 40 42 16 Long 74 01 10	40	Flood	20	34	3.01
1612	10.39	1/4 way across from Pier A	Lat 40 42 17 Long 74 01 20	1	Flood	20	38	3.08
1613	10.41	" " " "	Lat 40 42 17 Long 74 01 20	20	Flood	20	36	3.08
1614	10.43	" " " "	Lat 40 42 17 Long 74 01 20	40	Flood	20	34	3.08
1615	10.48	1/2 way across	Lat 40 42 19 Long 74 01 34	1	Flood	20	40	3.19
1616	10.50	" " " "	Lat 40 42 19 Long 74 01 34	20	Flood	20	36	3.19
1617	10.52	" " " "	Lat 40 42 19 Long 74 01 34	40	Flood	20	36	3.19
1618	10.57	3/4 way across from Pier A	Lat 40 42 21 Long 74 01 48	1	Flood	20	42	3.27
1619	10.59	" " " "	Lat 40 42 21 Long 74 01 48	20	Flood	20	36	3.27
1620	11.01	" " " "	Lat 40 42 21 Long 74 01 48	40	Flood	20	38	3.27
1621	11.06	300 feet off C.R.R. of N.J. ferry	Lat 40 42 22 Long 74 01 59	1	Flood	20	42	3.06
1622	11.08	200 feet off C.R.R. of N.J. ferry	Lat 40 42 22 Long 74 01 59	15	Flood	20	36	3.19
1623	11.10	200 feet off C.R.R. of N.J. ferry	Lat 40 42 22 Long 74 01 59	25	Flood	20	38	3.19

Ex. 94. p.139

Dissolved Oxygen. Hudson River—Cross-section between Pier A. Sept. 29, 1911.
New York and C.R.R. off N. J. Ferry, Jersey City.

Low water occurred at Governors Island at 6.07 a.m. High water at 12.13 p.m. Low water at 6.07 p.m. Flood currents began about 10.30 a.m.

Sample No.	Hour p.m.	Location of Sample		Tidal Temp our- rents	Per- cent Deg.C	Per- cent water	Oxyd- ized per satu- ration.
		Approximate	Exact	Feet below surface			
1624	12.30	200 feet off Pier A.	Lat 40 48 16	1	Flood 20	36	3.14 55
			Long 74 01 10				
1625	12.32	" " "	Lat 40 42 16	20	Flood 20	34	3.28 57
			Long 74 01 10				
1626	12.34	" " "	Lat 40 42 16	40	Flood 20	34	3.28 57
			Long 74 01 10				
1627	12.39	1/4 way across from Pier A.	Lat 40 42 17	1	Flood 20	36	3.19 56
			Long 74 01 20				
1628	12.41	" " "	Lat 40 42 17	20	Flood 20	34	3.36 59
			Long 74 01 20				
1629	12.43	" " "	Lat 40 42 17	40	Flood 20	34	3.36 59
			Long 74 01 20				
1630	12.48	Half way across	Lat 40 42 19	1	Flood 20	36	3.27 57
			Long 74 01 34				
1631	12.50	" " "	Lat 40 42 19	20	Flood 20	34	3.41 60
			Long 74 01 34				
1632	12.52	" " "	Lat 40 42 19	40	Flood 20	32	3.41 60
			Long 74 01 34				
1633	12.57	3/4 way across from Pier A.	Lat 40 42 21	1	Flood 20	40	3.38 57
			Long 74 01 46				
1634	12.59	" " "	Lat 40 42 21	20	Flood 20	34	3.49 61
			Long 74 01 48				
1635	1.01	" " "	Lat 40 42 21	40	Flood 20	32	3.48 61
			Long 74 01 48				
1636	1.06	200 feet off C.R.R. off N. J. ferry.	Lat 40 42 22	1	Flood 20	40	3.19 55
			Long 74 01 59				
1637	1.06	200 feet off C.R.R. off N. J. ferry.	Lat 40 42 22	15	Flood 20	34	3.25 58
			Long 74 01 59				
1638	1.10	200 feet off C.R.R. off N. J. ferry.	Lat 40 42 22	25	Flood 20	32	3.25 58
			Long 74 01 59				

Sept. 28, 1911.

Disolved Oxygen. Hudson River—Cross-section between Pier A, New York and C.N.R. off J. Ferry, Jersey City.

Low water occurred at Governors Island at 5.07 a.m. High water at 12.13 p.m. Low water at 6.07 p.m. Flood currents ended about 3.20 p.m.

Sample No.	Hour P.M.	Location of Sample	Approximate	Feet below surface	Tidal Temp. Per- cent water	Per- cent water	Green water
1639	2.30	200 feet off Pier A.	Lat 40 42 16 Long 74 01 10	1	Flood 20	32	3.28 56
1640	2.32	" " " "	Lat 40 42 16 Long 74 01 10	20	Flood 30	59	3.41 60
1641	2.34	" " " "	Lat 40 42 16 Long 74 01 10	40	Flood 20	28	3.41 60
1642	2.39	1/4 way across from Pier A.	Lat 40 42 17 Long 74 01 20	1	Flood 20	32	3.24 59
1643	2.41	" " " "	Lat 40 42 17 Long 74 01 20	20	Flood 20	28	3.20 62
1644	2.43	" " " "	Lat 40 42 17 Long 74 01 20	40	Flood 20	28	3.20 62
1645	2.42	Half way across	Lat 40 42 19 Long 74 01 34	1	Flood 20	32	3.41 60
1646	2.50	" " " "	Lat 40 42 19 Long 74 01 34	20	Flood 20	28	3.58 63
1647	2.52	" " " "	Lat 40 42 19 Long 74 01 34	40	Flood 20	28	3.58 63
1648	2.57	3/4 way across from Pier A.	Lat 40 42 21 Long 74 01 48	1	Flood 20	34	3.40 61
1649	2.59	" " " "	Lat 40 42 21 Long 74 01 48	20	Flood 20	28	3.62 64
1650	3.01	" " " "	Lat 40 42 21 Long 74 01 48	40	Flood 20	28	3.62 64
1651	3.04	200 feet off C.N.R. off J. ferry.	Lat 40 42 22 Long 74 01 59	1	Flood 20	26	3.47 60
1652	3.08	200 feet off C.N.R. off J. ferry.	Lat 40 42 22 Long 74 01 59	15	Flood 20	28	3.47 61
1653	3.10	200 feet off C.N.R. off J. ferry.	Lat 40 42 22 Long 74 01 59	28	Flood 20	28	3.47 61

Ex. 94. p. 141

Dissolved Oxygen. West River-Cross-section between Pier 10, Sept. 29, 1911.
Manhattan and Pier 10, Brooklyn.

Low water occurred at Governors Island at 6.07 a.m. High water at 12.00 p.m. Low water at 7.27 p.m. Black water from 8 a.m. to 8.50 a.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Feet		Fidal Temp	Per- cent	W.C. Percent	Oxygen	
				Surf	below surface					air-water	water	air-water
				0	"	Surf	Surf	Surf	Surf	
1684	7.30	100 feet off Pier 10, Manhattan		Lat 40 48 09	3	29.5	20	20	2.75	49
				Long 74 00 22						
1685	7.32	100 feet off Pier 10, Manhattan		Lat 40 42 09	20	"	20	20	2.97	53
				Long 74 00 22						
1686	7.34	100 feet off Pier 10, Manhattan		Lat 40 48 09	20	"	20	20	2.87	51
				Long 74 00 22						
1687	7.36	1/4 way across from Pier 10, Manhattan		Lat 40 48 09	1	"	20	20	2.80	49
				Long 74 00 17						
1688	7.40	1/4 way across from Pier 10, Manhattan		Lat 40 48 09	20	"	20	20	2.94	52
				Long 74 00 17						
1689	7.42	1/4 way across from Pier 10, Manhattan		Lat 40 42 09	40	"	20	20	2.94	52
				Long 74 00 17						
1690	7.46	Half way across		Lat 40 42 09	1	"	20	22	2.92	51
				Long 74 00 11						
1691	7.48	"	"	Lat 40 48 08	20	"	20	20	2.04	24
				Long 74 00 11						
1692	7.50	"	"	Lat 40 42 08	40	"	20	20	2.04	24
				Long 74 00 11						
1693	7.54	3/4 way across from Pier 10, Manhattan		Lat 40 42 08	1	"	20	20	2.84	50
				Long 74 00 08						
1694	7.56	3/4 way across from Pier 10, Manhattan		Lat 40 48 08	20	"	20	20	2.00	23
				Long 74 00 08						
1695	7.58	3/4 way across from Pier 10, Manhattan		Lat 40 42 08	26	"	20	20	2.20	25
				Long 74 00 08						
1696	8.02	100 feet off Pier 10, Brooklyn		Lat 40 42 09	1	"	20	22	2.79	49
				Long 74 00 00						
1697	8.04	100 feet off Pier 10, Brooklyn		Lat 40 41 57	20	"	20	20	2.32	52
				Long 74 00 00						
1698	8.06	100 feet off Pier 10, Brooklyn		Lat 40 43 07	26	"	20	20	2.32	52
				Long 74 00 00						

Dissolved Oxygen. East River-Cross-section between Pier 10, Sept. 29, 1911.
Manhattan and Pier 10, Brooklyn.

Low water occurred at Governors Island at 6.57 a.m. High water at 12.53 p.m. Low water

at 7.27 p.m. Flood currents began about 8.30 a.m.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. current water per cent	Per cent water per cent	Oxygen per cent
		Approximate	Exact				
1699	9.30	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	1	Flood	20	34 3.01 53
1700	9.32	" " " "	Lat 40 42 09 Long 74 00 22	20	"	20	30 3.14 55
1701	9.34	" " " "	Lat 40 42 09 Long 74 00 22	30	"	20	30 3.14 55
1702	9.38	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	1	"	20	34 3.08 54
1703	9.40	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	20	"	20	30 3.19 56
1704	9.42	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	40	"	20	30 3.19 56
1705	9.46	Half way across	Lat 40 42 03 Long 74 00 11	1	"	20	34 3.19 56
1706	9.48	" " "	Lat 40 42 03 Long 74 00 11	20	"	20	30 3.19 56
1707	9.50	" " "	Lat 40 42 03 Long 74 00 11	40	"	20	30 3.19 56
1708	9.54	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 05	1	"	20	32 3.12 56
1709	9.56	3/4 way across from Pier 10, Manhattan	Lat 40 42 11 Long 74 00 05	20	"	20	30 3.12 55
1710	9.58	3/4 way across from Pier 10, Manhattan	Lat 40 41 57 Long 74 00 00	35	"	20	30 3.12 55
1711	10.02	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	1	"	20	32 2.73 48
1712	10.04	" " " "	Lat 40 41 57 Long 74 00 00	20	"	20	30 2.92 51
1713	10.06	" " " "	Lat 40 41 57 Long 74 00 00	35	"	20	30 2.92 51

Dissolved Oxygen. East River-Cross-section between Pier 10, Sept. 29, 1911.
Manhattan and Pier 10, Brooklyn.
Low water occurred at Governors Island at 6.57 a.m. High water at 12.53 p.m. Low water
at 7.27 p.m. Flood currents began about 8.30 a.m.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal Temp. current- rents Deg.C	Per- cent water	Oxygen U.C. Percent per saturation litre
		Approximate	Exact O "				
1714	12.30	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	1	Flood	20	30 3.14 56
1715	12.32	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	20	"	20	28 3.28 58
1716	12.34	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	30	"	20	28 3.28 58
1717	12.40	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	1	"	20	30 3.19 56
1718	12.42	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	20	"	20	28 3.36 60
1719	12.44	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	40	"	20	28 3.36 60
1720	12.49	Half way across Manhattan	Lat 40 42 08 Long 74 00 11	1	"	20	30 3.33 59
1721	12.51	" "	Lat 40 42 08 Long 74 00 11	20	"	20	28 3.33 59
1722	12.53	" "	Lat 40 42 08 Long 74 00 11	40	"	20	28 3.33 59
1723	12.57	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 05	1	"	20	28 3.27 58
1724	12.59	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 05	20	"	20	28 3.27 58
1725	1.01	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 05	35	"	20	28 3.27 58
1726	1.05	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	1	"	20	28 3.06 54
1727	1.07	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	20	"	20	28 3.19 57
1728	1.09	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	35	"	30	29 3.19 57

Dissolved Oxygen. East River-Cross-section between Pier 10, Sept. 23, 1911.
Manhattan and Pier 10, Brooklyn.
Low water occurred at Governors Island at 6.57 a.m. High water at 12.53 p.m. Low water
at 7.27 p.m. Flood currents ended about 2.30 p.m.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal Temp. cur- rents Deg.C	Per- cent land water	Oxygen C.C. Percent satura- tion
		Approximate	Exact 0' "				
1729	2.30	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	1	Flood 20	28	5.28
1730	2.38	100 feet off Pier 10, Manhattan	Lat 40 42 02 Long 74 00 22	20	Flood 20	28	5.23
1731	2.34	100 feet off Pier 10, Manhattan	Lat 40 42 09 Long 74 00 22	30	Flood 20	28	5.28
1732	2.38	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	1	Flood 20	28	5.26
1733	2.40	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	20	Flood 20	23	3.86
1734	2.42	1/4 way across from Pier 10, Manhattan	Lat 40 42 07 Long 74 00 17	40	Flood 20	28	3.26
1735	2.46	Half way across Manhattan	Lat 40 42 03 Long 74 00 11	1	Flood 20	28	3.23
1736	2.46	Half way across	Lat 40 42 03 Long 74 00 11	20	Flood 20	28	3.23
1737	2.50	Half way across	Lat 40 42 03 Long 74 00 11	40	Flood 20	28	3.23
1738	2.54	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 06	1	Flood 20	28	3.27
1739	2.56	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 06	20	Flood 20	28	3.27
1740	2.58	3/4 way across from Pier 10, Manhattan	Lat 40 42 00 Long 74 00 06	35	Flood 20	28	3.27
1741	3.02	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	1	Flood 20	28	3.19
1742	3.04	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	20	Flood 20	28	3.19
1743	3.06	100 feet off Pier 10, Brooklyn	Lat 40 41 57 Long 74 00 00	35	Flood 20	28	3.19

Ex. 34. P.147

Dissolved Oxygen. East River Cross-section, between Pier 10, Manhattan and Pier 10, Brooklyn. Sept. 29, 1911.
 Low water occurred at Governors Island at 6.57 a.m. High water at 12.53 p.m. Low water at 7.57 p.m. Ebb currents began about 8 p.m.

Sample No.	Hour p.m.	Approximate Location of Samples	Feet below surface		Tidal Temp. cur- rents	Per- cent Deg. C	Oxygen per liter of water	Percent saturation
			Exact	0				
1744	4.30	100 feet off Pier 10, Manhattan	Lat 40 42 09	Long 74 00 52	1	20	2.87	51
1745	4.32	100 feet off Pier 10, Manhattan	Lat 40 42 09	Long 74 00 52	20	28	2.87	51
1746	4.34	100 feet off Pier 10, Manhattan	Lat 40 42 09	Long 74 00 52	30	28	2.87	51
1747	4.36	1/4 way across from Pier 10, Manhattan	Lat 40 42 07	Long 74 00 52	1	20	2.94	52
1748	4.40	1/4 way across from Pier 10, Manhattan	Lat 40 42 07	Long 74 00 17	20	28	2.98	55
1749	4.42	1/4 way across from Pier 10, Manhattan	Lat 40 42 07	Long 74 00 17	40	29	2.98	55
1750	4.46	Half way across	Lat 40 42 08	Long 74 00 17	1	20	2.94	54
1751	4.48	" "	Lat 40 42 08	Long 74 00 11	20	28	2.19	57
1752	4.50	" "	Lat 40 42 08	Long 74 00 11	40	29	2.19	57
1753	4.54	2/4 way across from Pier 10, Manhattan	Lat 40 42 08	Long 74 00 11	1	20	2.90	58
1754	4.56	2/4 way across from Pier 10, Manhattan	Lat 40 42 08	Long 74 00 08	20	28	2.92	58
1755	4.58	2/4 way across from Pier 10, Manhattan	Lat 40 42 08	Long 74 00 08	35	28	2.92	58
1756	5.02	100 feet off Pier 10, Brooklyn	Lat 40 41 57	Long 74 00 08	1	20	2.92	52
1757	5.04	100 feet off Pier 10, Brooklyn	Lat 40 41 57	Long 74 00 00	20	28	2.92	52
1758	5.06	100 feet off Pier 10, Brooklyn	Lat 40 41 57	Long 74 00 00	35	28	2.92	52

Dissolved Oxygen. East River-Cross-section between Pier 10, Sept. 29, 1911.
Manhattan and Pier 10, Brooklyn.
Low water occurred at Governors Island at 6.57 a.m. High water at 12.53 p.m. Low water
at 7.57 p.m. Ebb currents began about 3 p.m.

Sample No.	Hour p.m.	Location of Sample Approximate	Feet below surface		Tidal Temp deg. C	Per- cent oxygen	Per- cent water per satura- tion
			0	1			
1759	6.00	100 feet off Pier 10, Manhattan	Lat 40 42 09	1	Ebb	20	2.73 48
			Long 74 00 22				
1760	6.01	100 feet off Pier 10, Manhattan	Lat 40 42 09	20	Ebb	20	2.67 51
			Long 74 00 22				
1761	6.02	100 feet off Pier 10, Manhattan	Lat 40 42 09	30	Ebb	20	2.67 51
			Long 74 00 22				
1762	6.06	1/4 way across from Pier 10, Manhattan	Lat 40 42 07	1	Ebb	20	2.94 52
			Long 74 00 19				
1763	6.07	1/4 way across from Pier 10, Manhattan	Lat 40 42 07	20	Ebb	20	2.94 52
			Long 74 00 19				
1764	6.09	1/4 way across from Pier 10, Manhattan	Lat 40 42 07	40	Ebb	20	2.94 52
			Long 74 00 17				
1765	6.13	Half way across Manhattan	Lat 40 42 08	1	Ebb	20	3.04 54
			Long 74 00 11				
1766	6.14	" " "	Lat 40 42 08	20	Ebb	20	3.04 54
			Long 74 00 11				
1767	6.16	" " "	Lat 40 42 08	40	Ebb	20	3.04 54
			Long 74 00 11				
1768	6.20	3/4 way across from Pier 10, Manhattan	Lat 40 42 00	1	Ebb	20	3.00 53
			Long 74 00 05				
1769	6.21	3/4 way across from Pier 10, Manhattan	Lat 40 42 00	20	Ebb	20	3.00 53
			Long 74 00 03				
1770	6.25	3/4 way across from Pier 10, Manhattan	Lat 40 42 00	36	Ebb	20	3.00 53
			Long 74 00 05				
1771	6.27	100 feet off Pier 10, Brooklyn	Lat 40 41 57	1	Ebb	20	2.79 49
			Long 74 00 00				
1772	6.28	100 feet off Pier 10, Brooklyn	Lat 40 41 59	20	Ebb	20	2.93 52
			Long 74 00 00				
1773	6.30	100 feet off Pier 10, Brooklyn	Lat 40 41 57	36	Ebb	20	2.93 52
			Long 74 00 00				

Ex. 94, p. 143

Discolored Orogen. Hill was well-exposed at New Brighton, Staten Island, Oct. 4, 1911.
High water occurred at Governors Island at 5.00 a.m. Low water at 11.10 a.m. High water at 5.20 p.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Exact	Feet below surface	Tidal range	Per cent water	Barometer	Percentage water	Barometer
1776	7.30	100 feet off Jersey Street, New Brighton		Lat 40 30 51 Long 74 08 24	1	Flood 18	20	4.10	70	
1778	7.32	100 feet off Jersey Street, New Brighton		Lat 40 30 51 Long 74 08 24	16	Flood 18	20	4.20	74	
1776	7.34	100 feet off Jersey Street, New Brighton		Lat 40 30 51 Long 74 08 24	20	Flood 18	20	4.45	79	
1777	7.39	Midway between		Lat 40 30 57 Long 74 08 25	1	Flood 18	20	4.20	71	
1778	7.41	"		Lat 40 30 57 Long 74 08 25	20	Flood 18	20	4.49	76	
1779	7.43	"		Lat 40 30 57 Long 74 08 25	40	Flood 18	20	4.76	81	
1780	7.48	100 feet off Columbia Oil Co. pier (old)		Lat 40 30 02 Long 74 08 25	1	Flood 18	32	4.17	71	
1781	7.50	100 feet off Columbia Oil Co. pier (old)		Lat 40 30 02 Long 74 08 25	15	Flood 16	20	4.44	75	
1782	7.52	100 feet off Columbia Oil Co. pier (old)		Lat 40 30 02 Long 74 08 25	25	Flood 16	20	4.72	80	
1783	8.20	100 feet off Jersey Street, New Brighton		Lat 40 30 51 Long 74 08 24	1	Ebb 16	24	4.20	74	
1784	8.22	100 feet off Jersey Street, New Brighton		Lat 40 30 51 Long 74 08 24	18	Ebb 17	24	4.28	75	
1785	8.34	100 feet off Jersey Street, New Brighton		Lat 40 30 57 Long 74 08 25	20	Ebb 17	32	4.38	76	
1786	8.39	Midway between		Lat 40 30 57 Long 74 08 25	1	Ebb 16	24	4.48	76	
1787	8.41	"		Lat 40 30 57 Long 74 08 25	20	Ebb 17	32	4.69	78	
1790	8.49	"		Lat 40 30 57 Long 74 08 25	40	Ebb 17	32	4.69	79	

Discovered Oxygen. Kill van Kull Cross-section at New Brighton, Oct. 4, 1911.
 High water occurred at Governors Island at 8.03 a.m. Low water at 11.13 a.m. High water
 at 3.50 p.m.

Sample No.	Hour a.m.	Location of Samples		Exact o' "	Feet below surface	Tidal Temp. Per- centage		Oxygen U.C. Percent
		Approximate				Surf. deg. C	Water	
1789	9.43	100 feet off Columbia Oil Co. Pier (old)	Lat 40 39 08 Long 73 06 26		1	8bb	10	34 4.44 78
1790	9.50	100 feet off Columbia Oil Co. Pier (old)	Lat 40 39 08 Long 74 03 28		16	8bb	17	22 4.20 78
1791	9.52	" " " "	Lat 40 39 08 Long 74 03 28		26	8bb	17	32 4.89 78
1792	11.50	100 feet off Jersey Street, New Brighton	Lat 40 38 51 Long 74 03 24		1	8bb	10	36 4.10 69
1793	11.52	" " " "	Lat 40 38 51 Long 74 03 24		15	8bb	10	34 4.26 73
1794	11.54	" " " "	Lat 40 38 51 Long 74 03 24		30	8bb	17.5	34 4.26 72
1795	11.59	Midway across	Lat 40 38 51 Long 74 03 24		1	8bb	10	26 4.26 71
1796	11.41	" " " "	Lat 40 38 51 Long 74 03 24		30	8bb	17.5	34 4.26 79
1797	11.43	" " " "	Lat 40 38 51 Long 74 03 24		40	8bb	17.5	34 4.26 76
1798	11.48	100 feet off Columbia Oil Co. Pier (old)	Lat 40 39 08 Long 73 06 26		1	8bb	10	36 4.17 69
1799	11.50	" " " "	Lat 40 39 08 Long 73 06 26		18	8bb	17.5	34 4.44 74
1800	11.52	" " " "	Lat 40 39 08 Long 73 06 26		26	8bb	17.5	34 4.44 74
1801	1.30	100 feet off Jersey Street, New Brighton	Lat 40 38 51 Long 74 03 24		1	Flood	16	34 4.10 68
1802	1.32	" " " "	Lat 40 38 51 Long 74 03 24		15	Flood	17.5	32 4.26 73
1803	1.34	" " " "	Lat 40 38 51 Long 74 03 24		20	Flood	17.5	32 4.26 73

Ex. 94. p. 151

7199533

Disolved Oxygen. Kill van Kull-Cross-section at New Brighton. Oct. 4. 1911.
Staten Island.

High water occurred at Governors Island at 5.02 a.m. Low water at 11.18 a.m. High water
at 5.20 p.m.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal Temp. Per- cent deg. C land water	Oxygen C.C. Percent per saturation
		Approximate	Exact			
1804	1.39	Midway across	Lat 40 38 57 Long 74 05 25	1	Flood 18	34 4.26 71
1805	1.41	"	Lat 40 38 57 Long 74 05 25	20	Flood 17.5	30 4.55 76
1806	1.43	"	Lat 40 38 57 Long 74 05 25	40	Flood 17.5	30 4.56 76
1807	1.48	100 feet off Columbia Oil Co. pier (old)	Lat 40 39 02 Long 74 05 26	1	Flood 18	32 4.44 75
1808	1.50	100 feet off Columbia Oil Co. pier (old)	Lat 40 39 02 Long 74 05 26	15	Flood 17.5	30 4.58 76
1809	1.52	100 feet off Columbia Oil Co. pier (old)	Lat 40 39 02 Long 74 05 26	25	Flood 17.5	30 4.58 76
1810	3.30	100 feet off Jersey Street, New Brighton	Lat 40 38 51 Long 74 05 34	1	Flood 18.5	26 4.10 70
1811	3.32	100 feet off Jersey Street, New Brighton	Lat 40 38 51 Long 74 05 34	15	Flood 18.5	26 4.38 74
1812	3.34	100 feet off Jersey Street, New Brighton	Lat 40 38 51 Long 74 05 34	30	Flood 18.5	26 4.38 74
1813	3.39	Midway across	Lat 40 38 57 Long 74 05 25	1	Flood 18.5	28 4.17 71
1814	3.41	"	Lat 40 38 57 Long 74 05 25	30	Flood 18.5	26 4.44 75
1815	3.43	"	Lat 40 38 57 Long 74 05 25	40	Flood 18.5	26 4.44 75
1816	3.48	100 feet off Columbia Oil Co. pier (old)	Lat 40 39 02 Long 74 05 26	1	Flood 18.5	28 4.26 72
1817	3.50	100 feet off Columbia Oil Co. pier (old)	Lat 40 39 02 Long 74 05 26	15	Flood 18.5	26 4.40 74
1818	3.52	100 feet off Columbia Oil Co. pier (old)	Lat 40 39 02 Long 74 05 26	25	Flood 18.5	26 4.26 72

Ex. 94. P.152

Dissolved Oxygen. Kill van Kull-Cross-section at New Brighton. Oct. 4, 1911.
 Station Island.
 High water occurred at Governors Island at 6.02 a.m. Low water at 11.18 a.m. High water
 at 5.20 p.m.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal Temp. cur- rents Deg.C	Per- cent water	Oxygen C.C. Per cent per satu- ration
		Approximate	Exact				
1819	5.30	100 feet off Jersey Street, New Brighton	Lat 40 38 51 Long 74 06 24	1	Flood	18.5 28	4.39 74
1820	5.32	100 feet off Jersey Street, New Brighton	Lat 40 38 51 Long 74 06 24	15	Flood	18.5 26	4.65 79
1821	5.34	100 feet off Jersey Street, New Brighton	Lat 40 38 51 Long 74 36 24	30	Flood	18.5 26	4.65 79
1822	5.39	Midway across	Lat 40 38 57 Long 74 06 26	1	Flood	18.5 26	4.44 78
1823	5.41	"	Lat 40 38 57 Long 74 06 26	20	Flood	18.5 24	4.72 80
1824	5.43	"	Lat 40 38 57 Long 74 06 26	40	Flood	18.5 24	4.72 80
1825	5.48	100 feet off Columbia Oil Co. pier	Lat 40 39 02 Long 74 06 26	1	Flood	18.5 26	4.54 77
1826	5.50	100 feet off Columbia Oil Co. pier	Lat 40 39 02 Long 74 06 26	15	Flood	18.5 24	4.69 79
1827	5.52	100 feet off Columbia Oil Co. pier	Lat 40 39 02 Long 74 06 26	25	Flood	18.5 24	4.69 79

Oct. 6, 1911.

Dissolved Oxygen Research bag-Oxygen-section just below
C.R.R. of N.J. tracks.

High water occurred at Governors Island at 6.50 a.m. Low water at 12.45 p.m. High water
at 6.55 p.m.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current.	Temp. water.	Per cent per liter.	Oxygen per liter.
		Approximate	Exact					
1828	8.00	500 feet off east shore (Bayonne)	Lat 40 39 17	1	Ebb	15.5	40	5.88 62
			Long 74 06 27					
1829	8.06	" " "	Lat 40 39 17	10	Flood	16	32	5.88 64
			Long 74 06 27					
1830	8.06	In channel near draw	Lat 40 39 17	1	Ebb	15.5	40	5.84 61
			Long 74 06 46					
1831	8.06	" " "	Lat 40 39 17	15	Flood	16	36	4.12 66
			Long 74 06 46					
1832	8.10	" " "	Lat 40 39 17	20	Flood	16	36	3.70 60
			Long 74 06 46					
1833	8.14	Half way across bay	Lat 40 39 17	1	Ebb	15.5	40	5.89 62
			Long 74 09 14					
1834	8.16	" " "	Lat 40 39 17	8	Ebb	16	38	5.89 63
			Long 74 09 14					
1835	8.20	5/4 way across from east shore	Lat 40 39 17	1	Ebb	15.5	40	5.83 61
			Long 74 09 40					
1836	8.22	" " "	Lat 40 39 17	8	Ebb	16	38	5.83 62
			Long 74 09 40					
1837	8.26	500 feet off west shore	Lat 40 39 18	1	Ebb	15.5	40	5.91 62
			Long 74 10 08					
1838	8.28	" " "	Lat 40 39 18	8	Ebb	15.5	38	5.92 63
			Long 74 10 08					
1839	10.00	300 feet off east shore	Lat 40 39 17	1	Ebb	15.5	44	4.48 71
			Long 74 06 27					
1840	10.02	" " "	Lat 40 39 17	9	Ebb	16	40	4.48 71
			Long 74 06 27					
1841	10.06	In channel near draw	Lat 40 39 17	1	Ebb	16	40	4.26 68
			Long 74 06 46					
1842	10.08	" " "	Lat 40 39 17	15	Ebb	16	40	4.40 70
			Long 74 06 46					
1843	10.10	" " "	Lat 40 39 17	20	Ebb	16	40	4.26 68
			Long 74 06 46					

Ex. 94. p.154

Dissolved Oxygen. Newark Bay-Cross-section just below Oct. 6, 1911.
C.N.R. of N.J. Trestle.
High water occurred at Governors Island at 6.20 a.m. Low water at 12.48 p.m. High water
at 6.36 p.m.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal cur- rents	Temp. per- cent Deg.C	Per- cent saturation	Oxygen litre per litre
		Approximate	Exact					
1844	10.14	Half way across bay	Lat 40 39 17 Long 74 09 14	1	ebb	15.5	40	4.17
1845	10.16	" " "	Lat 40 39 17 Long 74 09 14	7	ebb	16	40	4.17
1846	10.20	3/4 way across from east shore	Lat 40 39 17 Long 74 09 40	1	ebb	15.5	40	4.18
1847	10.22	" " "	Lat 40 39 17 Long 74 09 40	7	ebb	16	40	4.10
1848	10.26	500 feet off west shore	Lat 40 39 18 Long 74 10 02	1	ebb	15.5	40	4.06
1849	10.28	" " "	Lat 40 39 18 Long 74 10 02	7	ebb	15.5	40	4.06
1850	12.00	500 feet off east shore	Lat 40 39 17 Long 74 08 27	1	ebb	16	46	4.18
1851	12.02	" " "	Lat 40 39 17 Long 74 08 27	8	ebb	16	44	4.32
1852	12.04	In channel near draw	Lat 40 39 17 Long 74 08 46	1	ebb	16	46	4.26
1853	12.06	" " "	Lat 40 39 17 Long 74 08 46	15	ebb	16	44	4.26
1854	12.08	" " "	Lat 40 39 17 Long 74 08 46	30	ebb	16	42	4.26
1855	12.12	Half way across bay	Lat 40 39 17 Long 74 09 14	1	ebb	16	48	4.44
1856	12.14	" " "	Lat 40 39 17 Long 74 09 14	6	ebb	16	46	4.68
1857	12.18	3/4 way across from east shore	Lat 40 39 17 Long 74 09 40	1	ebb	16	48	4.51
1858	12.20	" " "	Lat 40 39 17 Long 74 09 40	6	ebb	16	48	4.58

Ex. 94. p.155

October 6, 1913.

Remains by these sections just below
0.25 ft. of S. J. Correll.

Described map.

High water occurred at Governors Island at 6.50 a.m. Low water at 12.45 p.m. High
water at 6.55 p.m.

Sample No.	Hour P.M.	Location of Sample		Depth in feet	Tidal Temp.	Per- cent water content	Wt. of solid matter per cubic cent.	Wt. of solid matter per cubic cent.
		Approximate	Actual					
1859	12.24	800 feet off west shore	Lat 40 29 18 Long 74 10 02	1	88b	16	40	4.48
1860	12.26	" " " "	Lat 40 29 18 Long 74 10 02	6	88b	16	40	4.48
1861	2.00	800 feet off east shore	Lat 40 29 17 Long 74 08 27	1	88b	16	54	4.48
1862	2.02	" " " "	Lat 40 29 17 Long 74 08 27	0	88b	16	84	4.48
1863	2.04	In channel near draw	Lat 40 29 17 Long 74 08 46	1	88b	16	84	4.48
1864	2.06	" " " "	Lat 40 29 17 Long 74 08 46	16	88b	16	82	4.48
1865	2.08	" " " "	Lat 40 29 17 Long 74 08 46	30	88b	16	80	4.48
1866	2.10	Half way across	Lat 40 29 17 Long 74 08 46	1	88b	16	84	4.17
1867	2.14	" " " "	Lat 40 29 17 Long 74 08 46	6	88b	16	84	4.17
1868	2.18	3/4 way across from east shore	Lat 40 29 17 Long 74 09 40	1	88b	16	84	4.20
1869	2.20	" " " "	Lat 40 29 17 Long 74 09 40	5	88b	16	84	4.20
1870	2.24	300 feet off west shore	Lat 40 29 18 Long 74 10 02	1	88b	16	84	4.20
1871	2.26	" " " "	Lat 40 29 18 Long 74 10 02	6	88b	16	84	4.20
1872	2.30	800 feet off east shore	Lat 40 29 17 Long 74 08 27	1	Flood	18.5	48	5.00
1873	2.32	" " " "	Lat 40 29 17 Long 74 08 27	0	Flood	18.5	45	5.00

Ex. 94, p. 186

discovered ungued. Heavy bag-Grass-Section just below
6.5 ft. of S.J. level.

High water occurred at Governors Island at 6.50 a.m. Low water at 12.45 p.m. High water

at 6.55 p.m.

Sample No.	Hour P.M.	Location of Samples		Tidal Temp. Per- cent water cent ratio Deg.C lead water July 1898	Dist. from water per nature
		Approximate	Exact S. N. E. Surface		
1874	3.35	In channel, near area	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.84 60
1875	3.38	" " "	Lat 40 59 17 Long 74 08 45	Flood 15.0	40 2.84 60
1876	3.40	" " "	Lat 40 59 17 Long 74 08 45	Flood 15.5	44 4.15 64
1877	3.44	Half way across	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.80 61
1878	3.46	" " "	Lat 40 59 17 Long 74 08 45	Flood 15.5	44 2.80 61
1879	3.50	3/4 way across	Lat 40 59 17 Long 74 08 45	Flood 15.5	46 2.85 60
1880	3.52	" " "	Lat 40 59 17 Long 74 08 45	Flood 15.5	46 2.85 60
1881	3.55	200 feet off east shore	Lat 40 59 17 Long 74 10 00	Flood 15.5	46 2.96 61
1882	3.58	" " "	Lat 40 59 17 Long 74 10 00	Flood 15.5	46 2.92 61
1883	3.50	500 feet off east shore	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.88 62
1884	3.52	" " "	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.88 62
1885	3.55	In channel, near area	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.92 61
1886	3.58	" " "	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.92 61
1887	3.10	" " "	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.92 61
1888	3.14	Half way across	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.92 61
1889	3.16	" " "	Lat 40 59 17 Long 74 08 45	Flood 15.5	40 2.92 61

Diminished Oxygen. Severn bay-Cross-section just below
O.R.R. of N.J. trestle. Oct. 6, 1911.

High water occurred at Governors Island at 6.20 a.m. Low water at 12.45 p.m. High water
at 6.25 p.m.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal Temp. cur- rents Deg.C	Per- cent land water	Oxygen C.C. per litre
		Approximate	Exact				
1890	5.20	3/4 way across	Lat. 40 39 17 Long 74 09 40	1	Flood	15.5 36	3.55 56
1891	5.22	" "	Lat 40 39 17 Long 74 09 40	8	Flood	15.5 36	3.55 56
1892	5.26	300 feet off west shore	Lat 40 39 18 Long 74 10 02	1	Flood	16.5 36	3.64 58
1893	5.28	" " "	Lat 40 39 18 Long 74 10 02	8	Flood	15.5 36	3.64 58

Ex. 94. p.158

Dissolved Oxygen. East River-Cross-section between Lawrence Pt. and Stony Pt. Oct. 11, 1911.

High water occurred at Governors Island at 9.50 a.m.-Vell Gate-Low water at 5.15 a.m.

High water at 11.40 a.m. Low water at 6.10 p.m. Flood currents began about 7.15 a.m.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current per cent	Temp. Deg. C	Per cent water	Oxygen per litre
		Approximate	Exact					
1894	7.50	By Buoy 7 near Lawrence Point	Lat 40 47 54 Long 73 54 30	1	Flood	16.5	26	3.28
1895	7.52	" " " "	Lat 40 47 54 Long 73 54 30	20	Flood	16.5	26	3.28
1896	7.54	" " " "	Lat 40 47 54 Long 73 54 30	40	Flood	16.5	26	3.28
1897	7.58	Half way across	Lat 40 47 45 Long 73 54 31	1	Flood	16.5	26	3.27
1898	8.00	" " " "	Lat 40 47 45 Long 73 54 31	35	Flood	16.5	26	3.27
1899	8.02	" " " "	Lat 40 47 45 Long 73 54 31	70	Flood	16.5	26	3.27
1900	8.06	200 feet off E. 134 St. ferry. (Stony Pt.)	Lat 40 47 56 Long 73 54 31	1	Flood	16.5	26	3.33
1901	8.08	200 feet off E. 134 St. ferry. (Stony Pt.)	Lat 40 47 56 Long 73 54 31	35	Flood	16.5	26	3.33
1902	8.10	200 feet off E. 134 St. ferry. (Stony Pt.)	Lat 40 47 56 Long 73 54 31	70	Flood	16.5	26	3.33
1903	10.00	By Buoy 7 near Lawrence Point	Lat 40 47 54 Long 73 54 30	1	Flood	16.5	26	3.14
1904	10.02	" " " "	Lat 40 47 54 Long 73 54 30	20	Flood	16.5	26	3.28
1905	10.04	" " " "	Lat 40 47 54 Long 73 54 30	40	Flood	16.5	26	3.28
1906	10.06	Half way across	Lat 40 47 45 Long 73 54 31	1	Flood	16.5	26	3.12
1907	10.10	" " " "	Lat 40 47 45 Long 73 54 31	35	Flood	16.5	26	3.41
1908	10.12	" " " "	Lat 40 47 45 Long 73 54 31	70	Flood	16.5	26	3.41

Dissolved Oxygen. East River-Cross-section between Oct. 11, 1911.
Lawrence Ft. and Stony Ft.

High water occurred at Governors Island at 9.50 a.m. Hell Gate-Low water at 5.15 a.m.

High water at 11.40 a.m. Low water at 6.10 p.m. Flood currents began about 7.15 a.m.

Sample No.	Hour a.m.	Location of samples		Feet below surface	Tidal Temp. our- rents Deg.-C	Per- water cent land per water litre	Oxygen percent saturation
		Approximate	Exact				
1909	10.16	200 feet off E. 134 St. ferry	Lat 40 47 56 Long 73 54 31	1	Flood 16.5	30	3.19 53
1910	10.18	" " " "	Lat 40 47 56 Long 73 54 31	25	Flood 16.5	26	3.33 56
1911	10.20	" " " "	Lat 40 47 56 Long 73 54 31	70	Flood 16.5	29	3.33 56

Ex. 94. P. 160

Dissolved Oxygen. East River-Cross-section between Lawrence Ft. and Stuy Pt. Oct. 11, 1911.

High Gate - Low water occurred at 5.15 a.m. High water at 11.40 a.m. Flood currents began about 7.15 a.m. Flood currents ended about 12.15 p.m. Ebb currents began about 12.30 p.m.

Sample No.	Hour p.m.	Location of Samples Approximate	Flood Temp. Per- cent		Flood rate deg. C per litre	Flood water saturation	Flood water litre per litre
			Lat	Long			
1912	12.00	By Buoy 7 near Lawrence Ft.	Lat 40 47 34	Long 73 54 30	1	Flood	16.8 36
1913	12.02	" " " "	Lat 40 47 34	Long 73 54 30	20	Flood	16 32
1914	12.04	" " " "	Lat 40 47 34	Long 73 54 30	40	Flood	16 32
1915	12.06	Half way across	Lat 40 47 34	Long 73 54 30	1	Flood	16.8 36
1916	12.10	" " " "	Lat 40 47 34	Long 73 54 30	36	Flood	16 32
1917	12.12	" " " "	Lat 40 47 34	Long 73 54 30	70	Flood	16 32
1918	12.16	200 feet off E. 134 St. ferry	Lat 40 47 34	Long 73 54 30	1	Flood	16.8 36
1919	12.18	" " " "	Lat 40 47 34	Long 73 54 30	36	Flood	16 32
1920	12.20	" " " "	Lat 40 47 34	Long 73 54 30	70	Flood	16 32
1921	2.00	By Buoy 7 near Lawrence Ft.	Lat 40 47 34	Long 73 54 30	1	Ebb	16.8 28
1922	2.02	" " " "	Lat 40 47 34	Long 73 54 30	20	Ebb	16.8 28
1923	2.04	" " " "	Lat 40 47 34	Long 73 54 30	40	Ebb	16.8 28
1924	2.06	Half way across	Lat 40 47 34	Long 73 54 30	1	Ebb	16.8 28
1925	2.10	" " " "	Lat 40 47 34	Long 73 54 30	36	Ebb	16.8 28
1926	2.12	" " " "	Lat 40 47 34	Long 73 54 30	70	Ebb	16.8 28

Ex. 34, p. 161

Dissolved Oxygen. East River-Cross-section between Oct 11, 1911.
Lawrence St. and Stony St.

Hell Gate - Low water occurred at 8.18 a.m. High water at 11.40 a.m. Flood currents
began about 7.15 a.m. Flood currents ended about 12.18 p.m. Ebb currents began about 12.30 p.m.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal Temp. Ter- cur- rents Deg.C	Ter- water cent per saturation	Oxygen C.C. Percent per saturation
		Approximate	Exact				
1927	2.16	200 feet off E.134 St. Ferry	Lat 40 47 56 Long 73 54 31	1	Ebb	16.2	3.33
1928	2.18	" " " "	Lat 40 47 56 Long 73 54 31	35	Ebb	16.8	3.33
1929	2.20	" " " "	Lat 40 47 56 Long 73 54 31	70	Ebb	16.6	3.33

Ex. 94, P. 162

Disolved Oxygen. Real River-Cross-section between Oct. 13, 1913.
Lawrence Pt and Ding Pt.

Well Date - High water occurred at 11.40 a.m. Low water at 5.10 p.m. Ebb currents
began about 12.30 p.m.

Sample No.	Hour p.m.	Location of Samples		Feet below surface	Tidal Temp. Per cent U.C. Percent D.C. land water litre litre	Oxygen
		Approximate	Exact			
1930	4.00	By Boat 7 near Lawrence Pt.	Lat 40 47 34	1	Ebb 16.	24 3.50 89
			Long 73 54 30			
1931	4.02	" " " "	Lat 40 47 34	20	Ebb 16	24 3.60 92
			Long 73 54 30			
1932	4.04	" " " "	Lat 40 47 34	40	Ebb 16	24 3.60 92
			Long 73 54 30			
1933	4.06	Half way across	Lat 40 47 48	1	Ebb 16	24 3.70 92
			Long 73 54 30			
1934	4.10	" " " "	Lat 40 47 48	26	Ebb 16	24 3.90 94
			Long 73 54 31			
1935	4.12	" " " "	Lat 40 47 48	70	Ebb 16	24 3.94 94
			Long 73 54 31			
1936	4.16	200 feet off E. 124 St. Ferry	Lat 40 47 56	1	Ebb 16	24 3.61 95
			Long 73 54 31			
1937	4.18	" " " "	Lat 40 47 56	26	Ebb 16	24 3.75 95
			Long 73 54 31			
1938	4.20	" " " "	Lat 40 47 56	70	Ebb 16	24 3.75 95
			Long 73 54 31			
1939	5.00	By Boat 7 near Lawrence Pt.	Lat 40 47 34	1	Ebb 16	24 3.80 99
			Long 73 54 30			
1940	5.02	" " " "	Lat 40 47 34	50	Ebb 16	24 3.69 92
			Long 73 54 30			
1941	5.04	" " " "	Lat 40 47 34	60	Ebb 16	24 3.59 90
			Long 73 54 30			
1942	5.06	Half way across	Lat 40 47 48	1	Ebb 16	24 3.70 92
			Long 73 54 31			
1943	5.10	" " " "	Lat 40 47 48	26	Ebb 16	24 3.84 94
			Long 73 54 31			
1944	5.12	" " " "	Lat 40 47 48	70	Ebb 16	24 3.94 94
			Long 73 54 31			

Discolored Capped. Blue River-Cross-section between Oct. 13, 1913.
Lawrence P. and Hong P.

Full tide. High water occurred at 11.40 a.m. Low water at 6.30 p.m. The currents
began about 10.30 p.m.

Sample No.	Hour p.m.	Location of Sample		Feet below surface	Tidal Temp. Per- centage		Oxygen U.S. per cent per nature-
		Approximate	Lat	Long	cur- rent	deg. C	water
1945	5.16	200 feet off S. 124 St. ferry	Lat 40 47 56 N	Long 73 54 21 W	220	16	24
			Lat 40 47 56 N	Long 73 54 21 W	220	16	24
1946	5.18	" " " " " "	Lat 40 47 56 N	Long 73 54 21 W	220	16	24
			Lat 40 47 56 N	Long 73 54 21 W	220	16	24
1947	5.20	" " " " " "	Lat 40 47 56 N	Long 73 54 21 W	220	16	24
			Lat 40 47 56 N	Long 73 54 21 W	220	16	24

Ex. 94, P. 144

Dissolved Oxygen. Hudson River Cross-section at Mt. St. Vincent. Oct. 13, 1911.
 Low water occurred at Governors Island at 5.15 a.m. High water at 11.22 a.m.
 Mt. St. Vincent - Low water at 7.15 a.m. High water at 1.45 p.m.

Sample No.	Hour a.m.	Location of Samples		Exact " O	Feet below surface	Tidal Temp. Per- cur- water cent		Oxygen C.C. Percent per saturation
		Approximate				rent	Deg.C	
1948	7.45	500 feet off Mt. St. Vincent	Lat 40 54 50	1	2bb	15.5	80	5.74
			Long 73 54 49					84
1949	7.47	" " "	Lat 40 54 50	20	3bb	15	60	5.19
			Long 73 54 49					78
1950	7.49	" " "	Lat 40 54 50	40	2bb	15	58	5.19
			Long 73 54 49					78
1951	7.53	1/4 way across from east shore	Lat 40 54 50	1	2bb	15.5	80	5.83
			Long 73 54 49					85
1952	7.55	" " "	Lat 40 54 50	20	2bb	15	60	5.28
			Long 73 54 49					79
1953	7.57	" " "	Lat 40 54 50	40	2bb	15	58	5.28
			Long 73 54 49					79
1954	8.01	Half way across	Lat 40 54 50	1	2bb	15.5	78	5.88
			Long 73 55 16					86
1955	8.03	" " "	Lat 40 54 50	20	2bb	15	68	5.60
			Long 73 55 15					83
1956	8.05	" " "	Lat 40 54 50	35	2bb	15	66	5.60
			Long 73 55 15					84
1957	8.09	3/4 way across from east shore	Lat 40 54 50	1	2bb	15.5	76	5.97
			Long 73 55 30					88
1958	8.11	" " "	Lat 40 54 50	10	2bb	15	72	5.68
			Long 73 55 30					84
1959	8.13	" " "	Lat 40 54 50	20	2bb	15	72	5.68
			Long 73 55 30					84
1960	8.17	500 feet off west shore	Lat 40 54 50	1	2bb	15.5	76	5.94
			Long 73 55 42					87
1961	8.19	" " "	Lat 40 54 50	10	2bb	15.5	74	5.65
			Long 73 55 42					83
1962	8.21	" " "	Lat 40 54 50	15	2bb	15.5	74	5.65
			Long 73 55 42					83

Dissolved Oxygen. Hudson River Cross-section at Mt. St. Vincent. Oct. 13, 1911.
Mt. St. Vincent- Low water occurred at 7.15 a.m. High water at 1.45 p.m. Ebb currents
ended about 10.15

Sample No.	Hour a.m.	Location of Samples		Exact 0 "	Feet below surface	Tidal current	Temp. Deg.C	Per- cent water	Oxygen	
		Approximate							C.C. Percent per water litre	saturation
1963	9.45	500 feet off Mt. St. Vincent	Lat 40 54 50 Long 73 54 49	1	1	Ebb	15.5	76	5.74	84
1964	9.47	" " " "	Lat 40 54 50 Long 73 54 49	20	20	Ebb	15.5	68	5.19	77
1965	9.49	" " " "	Lat 40 54 50 Long 73 54 49	40	40	Ebb	15.5	68	5.19	77
1966	9.53	1/4 way across from east shore	Lat 40 54 50 Long 73 54 49	1	1	Ebb	15.5	76	5.83	86
1967	9.55	" " " "	Lat 40 54 50 Long 73 54 49	20	20	Ebb	15.5	68	5.28	79
1968	9.57	" " " "	Lat 40 54 50 Long 73 54 49	40	40	Ebb	15.5	68	5.28	79
1969	10.01	Half way across	Lat 40 54 50 Long 73 55 15	1	1	Ebb	15.5	76	5.88	87
1970	10.03	" " " "	Lat 40 54 50 Long 73 55 15	20	20	Ebb	15.5	68	5.60	84
1971	10.05	" " " "	Lat 40 54 50 Long 73 55 15	35	35	Ebb	15.5	68	5.60	84
1972	10.09	3/4 way across from east shore	Lat 40 54 50 Long 73 55 30	1	1	Ebb	15.5	76	5.97	88
1973	10.11	" " " "	Lat 40 54 50 Long 73 55 30	10	10	Ebb	15.5	70	5.68	85
1974	10.13	" " " "	Lat 40 54 50 Long 73 55 30	20	20	Ebb	15.5	70	5.68	85
1975	10.17	500 feet off west shore	Lat 40 54 50 Long 73 56 42	1	1	Ebb	15.5	76	5.94	87
1976	10.19	" " " "	Lat 40 54 50 Long 73 56 42	10	10	Ebb	15.5	72	5.65	84
1977	10.21	" " " "	Lat 40 54 50 Long 73 56 42	15	15	Ebb	15.5	70	5.65	84

Dissolved Oxygen. Hudson River-Cross-section at Mt. St. Vincent. Oct. 13, 1911.
Mt. St. Vincent-Low water occurred at 7.15 a.m. High water at 1.45 p.m. Flood currents
began about 10.30 a.m.

Sample No.	Hour a.m.	Location of Sample		Exact O " " surface	Feet below surface	Tidal Temp. Per- cent water cent		Oxygen C.C. Percent per saturation
		Approximate				rents Deg. C	land water	
1979	11.45	500 feet off Mt. St. Vincent		Lat 40 54 50 Long 73 54 49	1	Flood 15.5	70	4.94 74
1979	11.47	" " " "		Lat 40 54 50 Long 73 54 49	20	Flood 15.5	66	4.78 73
1980	11.49	" " " "		Lat 40 54 50 Long 73 54 49	40	Flood 15.5	64	4.78 73
1981	11.53	1/4 way across from east shore		Lat 40 54 50 Long 73 54 49	1	Flood 15.5	70	5.00 75
1982	11.55	" " " "		Lat 40 54 50 Long 73 54 49	20	Flood 15.5	66	4.87 74
1983	11.57	" " " "		Lat 40 54 50 Long 73 54 49	40	Flood 15.5	64	4.87 74
1984	12.01	Half way across		Lat 40 54 50 Long 73 54 49	1	Flood 15.5	72	5.04 75
1985	12.03	" " " "		Lat 40 54 50 Long 73 54 49	20	Flood 15.5	66	4.90 74
1986	12.05	" " " "		Lat 40 54 50 Long 73 54 49	35	Flood 15.5	66	4.90 74
1987	12.09	3/4 way across from east shore		Lat 40 54 50 Long 73 54 49	1	Flood 15.5	72	5.11 76
1988	12.11	" " " "		Lat 40 54 50 Long 73 54 49	10	Flood 15.5	68	5.00 75
1989	12.13	" " " "		Lat 40 54 50 Long 73 54 49	20	Flood 15.5	68	5.00 75
1990	12.17	500 feet off west shore		Lat 40 54 50 Long 73 54 49	1	Flood 15.5	72	5.22 78
1991	12.19	" " " "		Lat 40 54 50 Long 73 54 49	10	Flood 15.5	70	5.07 76
1992	12.21	" " " "		Lat 40 54 50 Long 73 54 49	15	Flood 15.5	70	5.07 76

Dissolved Oxygen. Hudson River-Cross-section at Mt. St. Vincent. Oct. 13, 1911.

Mt. St. Vincent-Low water occurred at 7.15 a.m. High water at 1.45 p.m. Flood currents

began about 10.30 a.m.

Sample No.	Hour p.m.	Location of Samples		Tidal Temp. per- cent deg.C	Per- cent water litre	Oxygen. U.C. Percent per litre
		Approximate	Exact 0' " surface			
1998	2.00	500 feet off Mt. St. Vincent	Lat 40 54 50 Long 73 54 49	1 Flood 15.5	64	4.78 73
1994	2.02	" " " "	Lat 40 54 50 Long 73 54 49	20 Flood 15.5	60	4.38 67
1996	2.04	" " " "	Lat 40 54 50 Long 73 54 49	40 Flood 15.5	50	4.38 67
1996	2.06	1/4 way across from east shore	Lat 40 54 50 Long 73 54 49	1 Flood 15.5	64	4.87 74
1997	2.10	" " " "	Lat 40 54 50 Long 73 54 49	20 Flood 15.5	60	4.44 68
1998	2.12	" " " "	Lat 40 54 50 Long 73 54 49	40 Flood 15.5	60	4.44 68
1999	2.16	Half way across	Lat 40 54 50 Long 73 54 49	1 Flood 15.5	64	4.90 74
2000	2.18	" " " "	Lat 40 54 50 Long 73 54 49	20 Flood 15.5	60	4.48 68
2001	2.20	" " " "	Lat 40 54 50 Long 73 54 49	38 Flood 15.5	60	4.48 68
2002	2.24	3/4 way across from east shore	Lat 40 54 50 Long 73 54 49	1 Flood 15.5	64	5.00 76
2003	2.26	" " " "	Lat 40 54 50 Long 73 54 49	10 Flood 15.5	60	4.85 70
2004	2.28	" " " "	Lat 40 54 50 Long 73 54 49	20 Flood 15.5	60	4.85 70
2005	2.32	500 feet off west shore	Lat 40 54 50 Long 73 54 49	1 Flood 15.5	68	5.07 77
2006	2.34	" " " "	Lat 40 54 50 Long 73 54 49	10 Flood 15.5	62	4.64 71
2007	2.36	" " " "	Lat 40 54 50 Long 73 54 49	16 Flood 15.5	60	4.64 71

Ex. 94, P. 168

Dissolved Oxygen. Hudson River-Cross-section at Mt. St. Vincent. Oct. 15, 1911.

Mt. St. Vincent. High water occurred at 1.45 p.m. Ebb currents began about 5.15 p.m.

Sample No.	Hour p.m.	Location of Samples		Feet below surface	Tidal range deg. C	Temp. air-water cent	Per-centage of water	Oxygen per litre	Oxygen per cubic foot
		Approximate	Exact						
2023	5.15	500 feet off Mt. St. Vincent	Lat 40 54 50 Long 73 54 49	1	Ebb	16	68	5.06	76
2024	5.17	" " " "	Lat 40 54 50 Long 73 54 49	20	Ebb	16	68	5.06	76
2025	5.19	" " " "	Lat 40 54 50 Long 73 54 49	40	Ebb	16	62	5.08	78
2026	5.22	1/4 way across from east shore	Lat 40 54 50 Long 73 54 49	1	Ebb	16	60	5.14	77
2027	5.25	" " " "	Lat 40 54 50 Long 73 54 49	20	Ebb	16	62	5.14	79
2028	5.27	" " " "	Lat 40 54 50 Long 73 54 49	40	Ebb	16	62	5.14	79
2029	5.30	Half way across	Lat 40 54 50 Long 73 54 49	1	Ebb	16	60	5.18	78
2030	5.32	" " " "	Lat 40 54 50 Long 73 54 49	20	Ebb	16	62	5.18	80
2031	5.34	" " " "	Lat 40 54 50 Long 73 54 49	40	Ebb	16	62	5.18	80
2032	5.36	3/4 way across from east shore	Lat 40 54 50 Long 73 54 49	1	Ebb	16	70	5.26	79
2033	5.40	" " " "	Lat 40 54 50 Long 73 54 49	10	Ebb	16	62	5.26	81
2034	5.42	" " " "	Lat 40 54 50 Long 73 54 49	20	Ebb	16	62	5.26	81
2035	5.44	500 feet off west shore	Lat 40 54 50 Long 73 54 49	1	Ebb	16	70	5.26	80
2036	5.46	" " " "	Lat 40 54 50 Long 73 54 49	10	Ebb	16	62	5.26	82
2037	5.50	" " " "	Lat 40 54 50 Long 73 54 49	18	Ebb	16	62	5.26	85

Ex. 94. P. 170

Decolved Oxygen. Upper New York Bay - vicinity of Robbins Reef light. October 16, 1911.
Low water occurred at Governors Island at 9.06 a.m. High water at 3.00 p.m.

Sample No.	Hour a.m.	Location of Sample		Exact O. " "	Feet below surface	Tidal Temp. per- cent		Dissolved Oxygen per litre	
		Approximate				Sur- face	at 10 fms	per litre	per litre
2038	9.30	1/2 mile S. E. Robbins Reef light	Lat 40 39 44 Long 74 03 29	1		16	36	3.96	64
2039	9.32	" "	Lat 40 39 44 Long 74 03 29	25		16.8	32	3.96	65
2040	9.35	" "	Lat 40 39 44 Long 74 03 29	45		16.8	32	3.96	65
2041	9.36	1/2 mile S. E. Robbins Reef light	Lat 40 39 16 Long 74 03 25	1		16	36	3.96	64
2042	9.37	" "	Lat 40 39 16 Long 74 03 25	20		16.8	32	4.22	69
2043	9.40	" "	Lat 40 39 16 Long 74 03 25	40		16.8	32	4.22	69
2044	9.50	1/2 mile S. Robbins Reef light	Lat 40 38 49 Long 74 03 49	1		16	36	4.03	65
2045	9.52	" "	Lat 40 38 49 Long 74 03 49	25		16.8	32	4.03	67
2046	9.55	" "	Lat 40 38 49 Long 74 03 49	50		16.8	32	4.03	67

Ex. 94. P. 171

Dissolved Oxygen. Upper New York Bay - vicinity of Robbins Reef light. October 16, 1911.
 Low water occurred at Governors Island at 9.06 a.m. High water at 3.09 p.m. Ebb currents
 ended 11.46 a.m.

Sample No.	Hour a.m.	Location of Samples	Approximate	Exact	Feet below surface	Tidal current	Temp. water	Per cent	Oxygen
2047	11.20	1/2 mile S. E. Robbins Reef	Lat 40 39 44	1	End of 16	44	4.10	65	
2048	11.22	"	Long 74 03 29	25	Ebb				
2049	11.25	"	Lat 40 39 44	45	Flood 16.5	32	3.96	65	
2050	11.26	"	Long 74 03 29	45	Flood 16.5	32	3.96	65	
2051	11.36	1/2 mile S. E. Robbins Reef light	Lat 40 39 16	1	End of 16	44	4.12	66	
2052	11.37	"	Long 74 03 25	20	Ebb				
2053	11.40	"	Lat 40 39 16	40	Flood 16.5	32	3.99	66	
2054	11.50	"	Long 74 03 25	40	Flood 16.5	32	3.98	66	
2055	11.52	"	Lat 40 39 16	1	End of 16	44	4.17	66	
2056	11.55	"	Long 74 03 48	25	Ebb				
2057	1.20	1/2 mile S. Robbins Reef	Lat 40 39 44	1	Flood 16	40	4.24	68	
2058	1.22	"	Long 74 03 29	25	Flood 16	28	4.65	77	
2059	1.25	"	Lat 40 39 44	45	Flood 16	28	4.65	77	
2060	1.35	1/2 mile S. E. Robbins Reef light	Lat 40 39 16	1	Flood 16	42	4.12	67	
2061	1.37	"	Long 74 03 25	20	Flood 16	28	4.40	73	
2062	1.40	"	Lat 40 39 16	40	Flood 16	28	4.40	73	

Dissolved Oxygen. Upper New York Bay-vicinity of Robbins Reeflight- Oct. 16, 1911.
 Low water occurred at Governors Island at 9.06 a.m. High water at 5.09 p.m.

Sample No.	Hour p.m.	Location of Samples		Exact 0.1 surface	Feet below surface	Tidal Temp. Per- cent water Deg. C	Per- cent land water	Oxygen per litre saturation
		Approximate						
2062	1.50	1/2 mile S. Robbins Reef- light	Lat 40 38 49 Long 74 03 48		1	Flood 16	36	4.31 71
2063	1.52	1/2 mile S. Robbins Reef- light	Lat 40 38 49 Long 74 03 48		25	Flood 16	24	4.58 76
2064	1.55	1/2 mile S. Robbins Reef- light	Lat 40 38 49 Long 74 03 48		50	Flood 16	24	4.58 76
2065	3.20	1/2 mile N.E. Robbins Reef- light	Lat 40 39 44 Long 74 03 29		1	Flood 16	32	4.65 77
2066	3.22	1/2 mile N.E. Robbins Reef- light	Lat 40 39 44 Long 74 03 29		25	Flood 16	22	4.65 77
2067	3.25	1/2 mile N.E. Robbins Reef- light	Lat 40 39 44 Long 74 03 29		45	Flood 16	22	4.65 77
2068	3.35	1/2 mile E.S.E. Robbins Reeflight	Lat 40 39 16 Long 74 03 25		1	Flood 16	32	4.55 75
2069	3.37	1/2 mile E.S.E. Robbins Reeflight	Lat 40 39 16 Long 74 03 25		20	Flood 16	22	4.55 76
2070	3.40	1/2 mile E.S.E. Robbins Reeflight	Lat 40 39 16 Long 74 03 25		40	Flood 16	22	4.55 76
2071	3.50	1/2 mile S. Robbins Reef- light	Lat 40 38 49 Long 74 03 48		1	Flood 16	28	4.53 76
2072	3.52	1/2 mile S. Robbins Reef- light	Lat 40 38 49 Long 74 03 48		25	Flood 16	20	4.58 76
2073	3.55	1/2 mile S. Robbins Reef- light	Lat 40 38 49 Long 74 03 48		50	Flood 16	20	4.58 76
2074	5.10	1/2 mile N.E. Robbins Reef- light	Lat 40 39 44 Long 74 03 29		1	Flood 16	30	4.65 77
2075	5.12	1/2 mile N.E. Robbins Reef- light	Lat 40 39 44 Long 74 03 29		25	Flood 16	20	4.65 79
2076	5.14	1/2 mile N.E. Robbins Reef- light	Lat 40 39 44 Long 74 03 29		45	Flood 16	20	4.65 79

Dissolved Oxygen. Upper New York Bay—vicinity of Robbins Reeflight. Oct. 16, 1911.

Low water occurred at Governors Island at 9.06 a.m. High water at 3.09 p.m.

Sample No.	Hour p.m.	Location of Samples		Feet below surface	Tidal Temp. our-vents	Per-cent Deg.C	Oxygen	
		Approximate	Exact, "				C.C. per litre	Percent saturation
2077	5.18	1/2 mile S.S.E. Robbins Reef-light	Lat 40 39 16 Long 74 03 28	1	Flood	16	30	4.56 75
2078	5.20	1/2 mile S.S.E. Robbins Reef-light	Lat 40 39 16 Long 74 03 28	20	Flood	16	20	4.68 79
2079	5.22	1/2 mile S.S.E. Robbins Reef-light	Lat 40 39 16 Long 74 03 28	40	Flood	16	20	4.68 79
2080	5.26	1/2 mile S. Robbins Reef-light	Lat 40 38 49 Long 74 03 48	1	Flood	16	30	4.58 76
2081	5.28	1/2 mile S. Robbins Reef-light	Lat 40 38 49 Long 74 03 48	25	Flood	16	20	4.58 78
2082	5.30	1/2 mile S. Robbins Reef-light	Lat 40 38 49 Long 74 03 48	50	Flood	16	20	4.58 76

Sta. 94, E. 174

Dissolved Oxygen. Upper New York Bay vicinity of Robbins Reef. Oct. 23, 1911.
 High water occurred at Governors Island at 6.37 a.m. Low water at 3.10 p.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Feet		Tidal range	Per- cent	C.M.		Percent	
				Excess	below			water	land		
				o' "		Flood		water		litre- tion	
2083	9.30	500 feet east of Buoy 28-1 mile north of Robbins Reef light	"	Lat 40 40 12 Long 74 03 10	1	Flood 16	62	4.76		75	
2084	9.32	"	"	Lat 40 40 12 Long 74 03 10	28	Flood 16	34	4.65		76	
2085	9.35	"	"	Lat 40 40 12 Long 74 03 10	50	Flood 16	32	4.66		76	
2086	9.45	1 mile S.E. Robbins Reef light-Line from light to 64 St. Brooklyn and from Liberty Island to Fort Madsen	"	Lat 40 39 08 Long 74 02 53	1	Flood 16	62	4.72		74	
2087	9.47	"	"	Lat 40 39 08 Long 74 02 53	18	Flood 16	34	4.72		76	
2088	9.50	"	"	Lat 40 39 08 Long 74 02 53	30	Flood 16	32	4.72		77	
2089	10.00	1 mile S.E. Robbins Reef light-Midway between 2 spar buoys off Tompkinsville, N.Y.	"	Lat 40 38 33 Long 74 03 42	1	Flood 16	44	4.83		77	
2090	10.02	"	"	Lat 40 38 33 Long 74 03 42	26	Flood 16	32	4.83		79	
2091	10.05	"	"	Lat 40 38 33 Long 74 03 42	50	Flood 16	30	4.83		79	
2092	10.16	1/4 mile S. of E. of Robbins Reef light-1/4 mile S.E. of Robbins Reef bell buoy	"	Lat 40 39 26 Long 74 03 37	1	Flood 16	46	4.92		78	
2093	10.17	"	"	Lat 40 39 26 Long 74 03 37	30	Flood 16	34	4.92		81	
2094	10.20	"	"	Lat 40 39 26 Long 74 03 37	50	Flood 16	32	4.92		81	
2095	10.44	Barrows-Midway between Forts	"	Lat 40 36 28 Long 74 02 48	1	Flood 16	42	5.07		81	
2096	10.47	"	"	Lat 40 36 28 Long 74 02 48	40	Flood 16	32	5.07		83	
2097	10.50	"	"	Lat 40 36 28 Long 74 02 48	80	Flood 16	30	5.07		83	

Upper New York Bay vicinity of Robbins Reef. Oct. 23, 1911.

Ebb currents began about 11.15 a.m.

Sample No.	Hour p.m.	Location of Samples	Approximate	East, 0	West, below surface	Tidal current, per cent.	Temp. water, deg. C.	Oxygen	
								per cent. water	per cent. air
2098	12.30	500 feet east of Buoy 92		Lat 40 40 12 Long 74 03 10	1	Ebb	16	22	4.10 65
2099	12.32	" " " "		Lat 40 40 12 Long 74 03 10	28	Ebb	16	26	4.10 46
2100	12.36	" " " "		Lat 40 40 12 Long 74 03 10	50	Ebb	16	38	4.10 66
2101	12.46	1 mile S.S. Robbins Reef		Lat 40 39 08 Long 74 02 53	1	Ebb	16	34	4.31 69
2102	12.47	" " " "		Lat 40 39 08 Long 74 02 53	15	Ebb	16	36	4.59 74
2103	12.50	" " " "		Lat 40 39 08 Long 74 02 53	30	Ebb	16	36	4.59 74
2104	1.00	1 mile S.S. Robbins Reef		Lat 40 38 53 Long 74 03 42	2	Ebb	16	34	4.69 74
2105	1.02	" " " "		Lat 40 38 53 Long 74 03 42	25	Ebb	16	46	4.81 72
2106	1.05	" " " "		Lat 40 38 53 Long 74 03 42	50	Ebb	16	46	4.81 72
2107	1.08	" " " "		Lat 40 38 53 Long 74 03 42	1	Ebb	16	66	4.78 78
2108	1.17	1/4 mile S. of Robbins Reef		Lat 40 38 26 Long 74 03 37	30	Ebb	16	40	4.78 76
2109	1.20	" " " "		Lat 40 38 26 Long 74 03 37	50	Ebb	16	40	4.78 76
2110	1.45	Narrow-Midway between Ports		Lat 40 36 26 Long 74 02 48	1	Ebb	16	54	4.63 73
2111	1.47	" " " "		Lat 40 36 26 Long 74 02 48	40	Ebb	16	42	4.63 74
2112	1.50	" " " "		Lat 40 36 26 Long 74 02 48	80	Ebb	16	42	4.63 74

Dissolved oxygen. Upper New York Bay - vicinity of Hoboken Reef, October 29, 1913.
(Continued.)

Sample No.	Hour p.m.	Location of Sample		Feet below surface	Tidal stage	Temp. water	Per cent water	Dissolved oxygen
		Approximate	Exact					
2113	3.30	500 feet E. of Mary Is.	Lat 40 40 18 Long 74 03 10	1	ebb 16	66	4.61	69
2114	3.30	" " " "	Lat 40 40 18 Long 74 03 10	10	ebb 16	57	4.39	70
2115	3.30	" " " "	Lat 40 40 18 Long 74 03 10	50	ebb 16	56	4.39	70
2116	3.40	1 mile S.E. of Hoboken Reef	Lat 40 39 08 Long 74 02 52	1	ebb 16	74	4.50	69
2117	3.40	" " " "	Lat 40 39 08 Long 74 02 52	10	ebb 16	80	4.44	69
2118	3.40	" " " "	Lat 40 39 08 Long 74 02 52	50	ebb 16	56	4.44	70
2119	3.40	1 mile S.E. of Hoboken Reef	Lat 40 39 23 Long 74 03 42	1	ebb 16	68	4.40	70
2120	3.40	" " " "	Lat 40 39 23 Long 74 03 42	10	ebb 16	56	4.26	68
2121	3.40	" " " "	Lat 40 39 23 Long 74 03 42	50	ebb 16	52	4.26	68
2122	3.40	1/4 mile S. of S. of Hoboken Reef	Lat 40 39 23 Long 74 03 42	1	ebb 16	64	4.34	67
2123	3.40	" " " "	Lat 40 39 23 Long 74 03 42	10	ebb 16	52	4.34	68
2124	3.40	" " " "	Lat 40 39 23 Long 74 03 42	50	ebb 16	50	4.34	68
2125	3.40	Narrow midway between forts	Lat 40 36 28 Long 74 02 40	1	ebb 16	64	4.28	76
2126	3.40	" " " "	Lat 40 36 28 Long 74 02 40	40	ebb 16	50	4.02	79
2127	3.40	" " " "	Lat 40 36 28 Long 74 02 40	80	ebb 16	50	4.02	79

Ex. 90, p. 197

Stevedore Duggan, Upper New York Bay-vicinity of Robbins Reef, Oct. 24, 1923.
 High water occurred at Governors Island at 9.15 a.m. Low water at 5.55 p.m.

Sample No.	Hour a.m.	Location of Sample	Approximate	Feet		Tidal Temp. sur- face deg. C	Per- cent water lost	Percent moisture per volume
				Reset 0	below surface			
E188	9.45	1/4 mile S. of Robbins Reef light	"	Lat 40 39 26 Long 74 03 37	1	Flood 15.5	52	4.55
E189	9.48	"	"	Lat 40 39 24 Long 74 03 37	80	Flood 15.5	44	4.30
E190	9.51	"	"	Lat 40 39 26 Long 74 03 37	80	Flood 15.5	44	4.30
E191	10.00	1/4 mile S.E. Robbins Reef light	"	Lat 40 39 19 Long 74 03 42	1	Flood 15.5	52	4.72
E192	10.03	"	"	Lat 40 39 19 Long 74 03 42	20	Flood 15.5	44	4.44
E193	10.04	"	"	Lat 40 39 19 Long 74 03 42	40	Flood 15.5	42	4.44
E194	10.16	1/4 mile S. Robbins Reef light	"	Lat 40 39 15 Long 74 03 54	1	Flood 15.5	46	4.83
E195	10.16	"	"	Lat 40 39 15 Long 74 03 54	10	Flood 15.5	42	4.55
E196	10.21	"	"	Lat 40 39 15 Long 74 03 54	50	Flood 15.5	36	4.55
E197	10.30	Bar Harbor Bay A (nearest Baxter ledge) off Tompkinsville	"	Lat 40 39 44 Long 74 03 42	1	Flood 15.5	52	4.91
E198	10.78	"	"	Lat 40 39 44 Long 74 03 42	85	Flood 15.5	34	4.92
E199	10.36	"	"	Lat 40 39 44 Long 74 03 42	50	Flood 15.5	34	4.92
E200	11.00	Barren-Widney between forts	"	Lat 40 36 25 Long 74 02 49	1	Flood 15.5	42	5.22
E201	11.08	"	"	Lat 40 36 25 Long 74 02 49	40	Flood 15.5	30	5.07
E202	11.06	"	"	Lat 40 36 25 Long 74 02 49	50	Flood 15.5	30	5.07

Oct. 24, 1911.

Dissolved Oxygen. Upper New York Bay- vicinity of Robbins Reef.

Ebb currents began about 11.45 a.m.

Sample No.	Hour P.M.	Location of Samples Approximate	Feet		Tidal Temp. Per- car- water cent Deg.C	Per- water litre	Oxygen Per- cent saturation		
			Exact	" surface					
2143	12.45	1/2 mile S of E. of Robbins Reef	Lat 40 39 26	1	Ebb	16	56	4.94	77
2144	12.48	"	Long 74 03 37	30	Ebb	16	40	4.94	79
2145	12.51	"	Lat 40 39 26	60	Ebb	16	40	4.94	79
2146	1.00	S.E. of Robbins Reef	Long 74 03 37	1	Ebb	16	56	5.00	78
2147	1.03	"	Lat 40 39 19	20	Ebb	16	40	5.00	80
2148	1.06	"	Long 74 03 42	40	Ebb	16	40	5.00	80
2149	1.15	S. of Robbins Reef	Lat 40 39 13	1	Ebb	16	56	5.11	80
2150	1.19	"	Long 74 03 54	10	Ebb	16	46	5.11	82
2151	1.21	"	Lat 40 39 13	20	Ebb	16	42	5.11	82
2152	1.30	Near spar buoy A nearest Baxter Ledge	Long 73 03 54	1	Ebb	16	54	5.22	82
2153	1.33	"	Lat 40 39 44	25	Ebb	16	44	5.22	83
2154	1.36	"	Long 74 03 42	50	Ebb	16	42	5.22	83
2155	2.00	Narrows midway between Forts	Lat 40 36 25	1	Ebb	16	54	5.22	82
2156	2.03	"	Long 74 03 48	40	Ebb	16	40	5.22	83
2157	2.06	"	Lat 40 36 25	80	Ebb	16	40	5.22	83

Ex. 94. P. 179

Dissolved Oxygen. Upper New York Bay - vicinity of Robbins Reef. October 24, 1911.
(Continued.)

Sample No.	Hour P.m.	Location of Samples		Exact O	Feet below surface	Tidal Temp. Per- cent water cent deg.C land per water litre tion			Oxygen U.C. Percent saturation	
		Approximate								
2159	3.45	1/4 mile S. of E. of Robbins Reef		Lat 40 39 26 Long 74 03 37	1	Ebb	15.5	64	5.06	77
2159	3.47	" " " "		Lat 40 39 26 Long 74 03 37	30	Ebb	15.5	52	5.06	78
2159	3.47	" " " "		Lat 40 39 26 Long 74 03 37	60	Ebb	15.5	52	5.06	78
2160	3.50	" " " "		Lat 40 39 26 Long 74 03 37	1	Ebb	15.5	64	5.14	78
2161	4.00	1/4 mile S. E. of Robbins Reef		Lat 40 39 19 Long 74 03 42	20	Ebb	15.5	52	5.14	80
2162	4.02	" " " "		Lat 40 39 19 Long 74 03 42	40	Ebb	15.5	52	5.14	80
2163	4.05	" " " "		Lat 40 39 13 Long 74 03 54	1	Ebb	15.5	68	5.26	79
2164	4.16	1/4 mile S. of Robbins Reef		Lat 40 39 13 Long 74 03 54	10	Ebb	15.5	52	5.26	81
2165	4.17	" " " "		Lat 40 39 13 Long 74 03 54	20	Ebb	15.5	52	5.26	81
2166	4.20	" " " "		Lat 40 38 44 Long 74 03 54	1	Ebb	15.5	68	5.36	80
2167	4.30	Near spar buoy A nearest Batter Ledge		Lat 40 38 44 Long 74 03 42	25	Ebb	15.5	52	5.36	83
2168	4.32	" " " "		Lat 40 38 44 Long 74 03 42	50	Ebb	15.5	52	5.36	83
2169	4.35	" " " "		Lat 40 38 44 Long 74 03 42	1	Ebb	15.5	60	5.52	84
2170	4.50	Narrows midway between forts		Lat 40 36 25 Long 74 02 48	40	Ebb	15.5	52	5.52	86
2171	4.52	" " " "		Lat 40 36 25 Long 74 02 48	80	Ebb	15.5	52	5.52	86
2172	4.55	" " " "		Lat 40 36 25 Long 74 02 48		Ebb	15.5	52	5.52	86

East River Cross-section. Throgs Neck to
Dissolved Oxygen. Killeck Point. October 26, 1911.

High water at Governors Island at 9.52 a.m. Low water at Killeck at 6.50 a.m.
High water at Killeck at 11.42 a.m. Low water at 6.20 p.m.

Sample No.	Hour a.m.	Location of Samples		Exact " "	feet below surface	Tidal Temp.		Per- cent land water	Oxygen per litre	Percent saturation
		Approximate				cur- rent	deg. C.			
2173	7.30	1/4 way across from Throgs Neck	Lat 40 48 08 Long 73 47 42	1	Ebb	15	26	4.38	71	
2174	7.32	" " " "	Lat 40 48 08 Long 73 47 42	30	Ebb	14.5	26	4.94	79	
2175	7.36	" " " "	Lat 40 48 08 Long 73 47 42	60	Ebb	14.5	26	4.94	79	
2176	7.42	Halfway across	Lat 40 48 00 Long 74 47 13	1	Ebb	15	26	4.44	72	
2177	7.44	" " " "	Lat 40 48 00 Long 73 47 13	40	Ebb	14.5	26	5.00	80	
2178	7.47	" " " "	Lat 40 48 00 Long 73 47 13	80	Ebb	14.5	26	5.00	80	
2179	7.55	3/4 way across from Throgs Neck	Lat 40 47 54 Long 73 47 05	1	Ebb	15	26	4.48	73	
2180	7.57	" " " "	Lat 40 47 54 Long 73 47 05	35	Ebb	14.5	26	5.04	80	
2181	8.00	" " " "	Lat 40 47 54 Long 73 47 05	70	Ebb	14.5	26	5.04	80	
2182	9.30	1/4 way across from Throgs Neck	Lat 40 47 54 Long 73 47 05	1	Flood	15	24	4.94	79	
2183	9.32	" " " "	Lat 40 47 54 Long 73 47 05	30	Flood	15	22	5.33	87	
2184	9.35	" " " "	Lat 40 47 54 Long 73 47 05	60	Flood	15	22	5.35	87	
2185	9.42	Halfway across	Lat 40 47 54 Long 73 47 05	1	Flood	15	24	4.87	78	

Ex. 94. P. 181

Dissolved Oxygen.

East River Cross-section. Thruge Neck to
Willels Point. (Continued.) October 25, 1911.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. Per- cent		Oxygen	
		Approximate	Exact		Sur- rent	water Deg-C	per satura- tion	water litre
2186	9.44	Halfway across	Lat 40 47 54 Long 73 47 08	40	Flood	15	22	5.42
2187	9.47	"	Lat 40 47 54 Long 73 47 08	80	Flood	15	22	5.42
2188	9.55	3/4 way across from Thruge Neck	Lat 40 47 54 Long 73 47 08	1	Flood	15	24	4.90
2189	9.57	3/4 way across from Thruge Neck	Lat 40 47 54 Long 73 47 08	35	Flood	15	24	5.46
2190	10.00	3/4 way across from Thruge Neck	Lat 40 47 54 Long 73 47 08	70	Flood	15	24	5.46
2191	11.30	1/4 way across from Thruge Neck	Lat 40 47 54 Long 73 47 08	1	Flood	16	24	5.33
2192	11.32	"	Lat 40 47 54 Long 73 47 08	30	Flood	16	24	5.33
2193	11.36	"	Lat 40 47 54 Long 73 47 08	60	Flood	16	24	5.33
2194	11.42	Halfway across	Lat 40 47 54 Long 73 47 08	1	Flood	16	24	5.42
2195	11.44	"	Lat 40 47 54 Long 73 47 08	40	Flood	16	24	5.42
2196	11.47	"	Lat 40 47 54 Long 73 47 08	80	Flood	16	24	5.42
2197	11.55	3/4 way across from Thruge Neck	Lat 40 47 54 Long 73 47 08	1	Flood	16	24	5.46
2198	11.57	"	Lat 40 47 54 Long 73 47 08	35	Flood	16	24	5.46
2199	12.00	"	Lat 40 47 54 Long 73 47 08	70	Flood	16	24	5.46
2200	1.30	1/4 way across from Thruge Neck	Lat 40 47 54 Long 73 47 08	1	Ebb	16.5	24	5.33

East River Cross Cross-section. Thruo Neck to
Willels Point. (Continued.) October 26, 1911.

Dissolved Oxygen.

Sample No.	Hour p.m.	Location of Samples		Tidal rent	Per- cent water	Per- cent water	Oxygen C.C. per liter	Oxygen per saturation
		Approximate	Exact					
2201	1.32	1/4 way across from Thruo Neck	Lat 40 47 54 Long 73 47 06	30	Flood	16.0	24	5.60 92
2202	1.36	" " " "	Lat 40 47 54 Long 73 47 06	60	Flood	16	24	5.60 92
2203	1.42	Halfway across	Lat 40 47 54 Long 73 47 06	1	Flood	16.5	24	5.42 89
2204	1.44	" " " "	Lat 40 47 54 Long 73 47 06	40	Flood	16	24	5.69 93
2205	1.47	" " " "	Lat 40 47 54 Long 73 47 06	80	Flood	16	24	5.69 93
2206	1.56	3/4 way across from Thruo Neck	Lat 40 47 54 Long 73 47 06	1	Flood	15.5	24	5.46 90
2207	1.57	" " " "	Lat 40 47 54 Long 73 47 06	35	Flood	15	24	5.74 94
2208	2.00	" " " "	Lat 40 47 54 Long 73 47 06	70	Flood	15	24	5.74 94
2209	2.30	1/4 way across from Thruo Neck	Lat 40 47 54 Long 73 47 06	1	Ebb	15.5	24	5.19 86
2210	3.32	" " " "	Lat 40 47 54 Long 73 47 06	30	Ebb	15.5	24	5.19 86
2211	3.36	" " " "	Lat 40 47 54 Long 73 47 06	60	Ebb	15.5	24	5.19 86
2212	3.42	Halfway across	Lat 40 47 54 Long 73 47 06	1	Ebb	15.5	24	5.29 87
2213	3.45	" " " "	Lat 40 47 54 Long 73 47 06	40	Ebb	15.5	24	5.29 87
2214	3.47	" " " "	Lat 40 47 54 Long 73 47 06	80	Ebb	15.5	24	5.29 87
2215	3.56	3/4 way across from Thruo Neck	Lat 40 47 54 Long 73 47 06	1	Ebb	15.5	24	5.32 87

Ex. 94, P. 183

Man River Cross-section. Throgs Neck to
Willels Point. (Continued.) October 25, 1911.

Dissolved Oxygen.

Sample No.	Hour P.M.	Location of Sample		Temp. °C.	Tidal range feet	Per- cent sat- uration	Cay- enne ther- mo- meter
		Approximate	from Throgs Neck				
2216	3.57	3/4 way across	Lat 40 47 54 Long 73 47 08	56	15.5	24	5.32
2217	4.00	"	Lat 40 47 54 Long 73 47 08	70	15.5	24	5.32
2218	5.00	1/4 "	Lat 40 47 54 Long 73 47 08	1	15.6	24	4.65
2219	5.02	"	Lat 40 47 54 Long 73 47 08	33	15.6	24	5.19
2220	5.06	"	Lat 40 47 54 Long 73 47 08	60	15.5	24	5.19
2221	5.12	halfway across	Lat 40 47 54 Long 73 47 08	1	15.5	24	4.72
2222	5.14	"	Lat 40 47 54 Long 73 47 08	40	15.5	24	5.20
2223	5.19	"	Lat 40 47 54 Long 73 47 08	80	15.6	24	5.20
2224	5.25	3/4 way across from Throgs Neck	Lat 40 47 54 Long 73 47 08	1	15.5	24	4.76
2225	5.27	"	Lat 40 47 54 Long 73 47 08	38	15.5	24	5.20
2226	5.30	"	Lat 40 47 54 Long 73 47 08	70	15.5	24	4.32

Ex. 94, P. 104

October 26, 1911.

Upper New York Bay. Course from mouth of Hudson river to Narrows.

Dissolved Oxygen.

High Water at Governors Island at 10.22 a.m. Low Water at 8.08 p.m.

Sample No.	Hour a.m.	Location of Samples Approximate	Depth fathoms	Fathoms below surface	Tidal current per hour	Temp. water in Deg. C	Percent salinity	Oxygen per litre	Direction
2227	10.20	Hudson river—midstream off Pier A	Lat 40 42 19 Long 74 01 24	1	Flood 10.5	74	6.19	74	
2228	10.22	"	Lat 40 42 19 Long 74 01 34	20	"	82	4.78	74	
2229	10.25	"	Lat 40 42 19 Long 74 01 34	40	"	82	4.78	74	
2230	10.40	800 ft. N. of Red star buoy E off Ellis Island	Lat 40 41 51 Long 74 02 03	1	" 15.5	70	5.89	79	
2231	10.42	"	Lat 40 41 51 Long 74 02 03	15	"	82	5.89	81	
2232	10.45	"	Lat 40 41 51 Long 74 02 03	25	"	46	5.89	82	
2233	11.00	800 ft. N. of One buoy S off Liberty Island	Lat 40 41 10 Long 74 02 30	1	" 15.5	68	5.11	76	
2234	11.02	"	Lat 40 41 10 Long 74 02 30	20	"	84	5.11	77	
2235	11.05	"	Lat 40 41 10 Long 74 02 30	40	"	84	5.11	77	
2236	11.20	800 ft. N. of buoy S E off entrance to P.N.H. Ferry	Lat 40 40 18 Long 74 03 13	1	" 15.5	64	5.81	84	
2237	11.22	"	Lat 40 40 18 Long 74 03 13	15	"	49	5.82	80	
2238	11.25	"	Lat 40 40 18 Long 74 03 13	30	"	45	5.82	80	
2239	11.40	1/4 mile S. of H. of Hobbs	Lat 40 39 26 Long 74 03 37	1	" 15.5	68	5.39	77	
2240	11.42	" Reef light	Lat 40 39 26 Long 74 03 37	20	"	44	5.19	80	
2241	11.45	"	Lat 40 39 26 Long 74 03 37	60	"	44	5.19	80	

Ex. 94. P. 166

October 26, 1911

Dissolved Oxygen. Upper New York bay- Course from mouth of Hudson river to Narrows. Continued.

High Water at Governors Island at 10.32 a.m. Low Water at 6.25 p.m.

Sample No.	Hour a.m.	Location of Samples	Approximate	Exact	Feet below surface	Tidal current	Temp. water		Percent		Oxygen
							Deg.	C.	land water	C.G. per litre	
2242	12.00	200 ft. W. of Bell buoy 12½		Lat 40 38 22	1	Flood	15.5	60	5.00	5.00	77
		"		Long 74 03 17							
2243	12.02	"		Lat 40 38 22	15	"	15	40	5.00	5.00	78
		"		Long 74 03 17							
2244	12.05	"		Lat 40 38 22	30	"	15	40	5.00	5.00	78
		"		Long 74 03 17							
2245	12.25	Narrows-mid way between		Lat 40 36 25	1	"	15.5	48	5.26	5.26	81
		"		Long 72 04 28							
2246	12.27	"		Lat 40 36 25	40	"	15	36	5.26	5.26	83
		"		Long 74 02 48							
2247	12.30	"		Lat 40 36 25	80	"	15	36	5.26	5.26	83
		"		Long 74 02 48							

Ex. 94. P. 186

October 26, 1911

Dissolved Oxygen Upper New York bay- Courses from mouth of Hudson River to Narrows.

High Water at Governors Island at 10.32 a.m. Low Water at 5.25 p.m.

Sample No.	Hour p.m.	Location of Samples Approximate	Lat	Long	Feet below surface	Tidal current	Temp. water per Deg C	Percent water	C.C. per litre	Oxygen saturation
2248	3.30	Narrows-midway between forts	Lat 40 36 26	Long 74 02 48	1	Ebb	16	64	5.11	77
2249	3.32	"	Lat 40 36 25	Long 74 02 48	40	"	16	46	5.11	81
2250	3.35	"	Lat 40 36 25	Long 74 02 48	80	"	16	46	5.11	81
2251	4.00	200 ft. W. of Bell buoy 12 $\frac{1}{2}$ off Owl Head "	Lat 40 36 25	Long 74 02 48	1	"	16	64	4.98	75
2252	4.02	"	Lat 40 36 25	Long 74 02 48	15	"	16	44	5.28	84
2253	4.05	"	Lat 40 36 25	Long 74 02 48	30	"	16	44	5.28	84
2254	4.15	$\frac{1}{2}$ mile S. of E. of Robbins Reef light "	Lat 40 39 26	Long 74 03 37	1	"	16	64	4.78	73
2255	4.17	"	Lat 40 39 26	Long 74 03 37	30	"	16	50	4.78	75
2256	4.20	"	Lat 40 39 26	Long 74 03 37	60	"	16	50	4.79	75
2257	4.30	200 ft. E. of buoy 52	Lat 40 39 26	Long 74 03 37	1	"	16	60	4.92	76
2258	4.32	"	Lat 40 39 26	Long 74 03 37	15	"	16	52	4.92	77
2259	4.35	"	Lat 40 39 26	Long 74 03 37	30	"	16	52	4.92	77
2260	4.45	500 ft. E. of Gas buoy 2 off Liberty Island	Lat 40 39 26	Long 74 03 37	1	"	16	70	5.39	81
2261	4.47	"	Lat 40 39 26	Long 74 03 37	20	"	16	66	5.11	80
2262	4.50	"	Lat 40 39 26	Long 74 03 37	40	"	16	66	5.11	80

Ex. 94. P. 187

October 26, 1911
Continued

Upper New York Bay-Course from mouth of Hudson river to Narrows.
High Water at Governors Island at 10.32 a.m. Low Water at 5.25 p.m.

Dissolved Oxygen

Sample No.	Hour P.M.	Location of Samples	Feet		Tidal Temp. cur- water rent Deg C	Percent land water	O.C. per litre	Oxygen saturation
			Exact	below surface				
2263	5.00	200 ft. S. of Red spar buoy 2.	1	40 41 51	16	76	5.25	79
		Long 74 02 03						
2264	5.02	" off Ellis Island	15	40 41 51	"	68	5.00	75
		Long 74 02 03						
2265	5.04	" "	25	40 41 51	"	54	5.00	73
		Long 74 02 03						
2266	5.08	Hudson river-midstream	1	40 42 19	"	76	5.19	76
		Long 74 01 34						
2267	5.10	" off Pier A	20	40 42 19	"	56	4.94	77
		Long 74 01 34						
2268	5.12	" "	40	40 42 19	"	54	4.94	77
		Long 74 01 34						

Ex. 94. P. 168

October 29, 1911

Hudson River

Dissolved Oxygen

High Water at Governors Island at 11.10 a.m.

Low Water at 6.15 p.m.

Sample No.	Hour a.m.	Approximate	East O	Feet below surface	Tidal sur- rent	Temp. water	Percent land water	C.C. per litre	Oxygen Percent satura- tion
2269	11.16	Hudson River-midstream	Lat 40 42 19 Long 70 01 34	1	Flood 15		76	5.42	61
2270	11.17	" off Pier A	Lat 40 42 19 Long 70 01 34	20	" 15		40	5.29	64
2271	11.20	"	Lat 40 42 19 Long 70 01 34	40	" 15		36	5.28	65
2272	8.30	Hudson River-midstream	Lat 40 42 50 Long 73 56 04	1	" 15		68	5.63	82
2273	2.32	" off Spuyten Duyvil	Lat 40 42 50 Long 73 56 04	15	" 15		68	5.00	74
2274	2.35	"	Lat 40 42 52 Long 73 56 04	30	" 15		60	5.00	72

Ex. 94. P. 109

Oct. 30, 1911.

Slips, etc.

Dissolved Oxygen

High water occurred at Governors Island at 1.33 p.m.

Low water at 7.55 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact o' "	Feet below surface	Tidal current	Temp. water cent	Per cent per Deg. C	Oxygen	
		Approximate							litre	per cent natural
2278	10.30	1000' off Morae Dry Docke	Lat 40 39 08	1	Flood	15	80	4.17	64	
		" bet. 55 and 57 St., Sklyn.	Long 74 01 53							
2279	10.35		Lat 40 39 05	30	Flood	15	80	4.17	64	
			Long 74 01 53							
2277	11.30	2nd slip east of De Graw	Lat 40 41 16	1	Flood	15	48	3.06	47	
		" St. middle of Slip	Long 74 00 24							
2278	11.35		Lat 40 41 16	20	Flood	15	46	3.33	52	
			Long 74 00 24							
2279	1.00	Wall about canal near	Lat 40 42 12	1	Flood	15	80	1.67	30	
		" Market	Long 73 59 09							
2280	1.05		Lat 40 42 12	20	Flood	15	80	1.67	30	
			Long 73 59 09							
2281	1.45	Slip No. of foot E. 24 St.	Lat 40 44 09	1	Flood	15	46	3.06	47	
		" New York, middle of slip	Long 73 59 27							
2282	1.50		Lat 40 44 09	20	Flood	15	46	3.06	47	
			Long 73 59 27							
2283	2.30	Slip foot Broadway, Astoria	Lat 40 46 07	1	Flood	15	48	2.78	43	
		" Outer end of slip	Long 73 56 16							
2284	2.35		Lat 40 46 07	10	Flood	15	48	2.78	43	
			Long 73 56 16							

Ex. 94. P. 190

Oct. 20, 1911.

Discolored Oxygen. Slips, etc.

High water occurred at Mill Gate at 9.25 P.M.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal stage	Temp. water	per cent dissolved	Cxygen
		Approximate	Elevation					
2000	9.20	Slip, Post E. 100 ft.	Lat 40 47 24 N. Long 73 56 13 W.	1	Flood	18	40	2.50
2001	9.25	" Garden River.	Lat 40 47 24 N. Long 73 56 13 W.	90	Flood	18	40	2.50

En. 94. P. 191

Nov. 3, 1911.

The Narrows - Deep hole outside Fort Lafayette.

Discolored Oxygen.

Low water occurred at Governors Island at 9.46 a.m. High water at 3.30 p.m.

Sample No.	Hour P.M.	Location of Sample		East of surface	Feet below surface	Tidal Temp. our- water- cent Deg. C		Rep- ent cent water- Deg. C	Oxygen per cent- natural	
		Approximate		0		Real	Surf	ent-1000	1000	
2287	1.00	The Narrows, line between red star buoy 124 and black can buoy 13-1/3 way across from buoy 124 South of Ft. Hamilton.		Lat 40 36 57 Long 74 02 15	1	Ebb	14.5	42	8.00	76
2288	1.06	"	"	Lat 40 38 57 Long 74 02 15	60	Flood	15	20	5.42	87
2289	1.10	"	"	Lat 40 38 57 Long 74 02 15	120	Flood	15	20	5.42	87
2290	3.30	The Narrows, deep hole, same as above		Lat 40 36 57 Long 74 02 15	1	Flood	14.5	34	5.42	85
2291	3.36	"	"	Lat 40 38 57 Long 74 02 15	60	Flood	15	28	5.36	90
2292	3.40	"	"	Lat 40 38 57 Long 74 02 15	120	Flood	15	26	5.34	90

Ex. 94. P. 102

Dissolved Oxygen. Harlem River, slip foot East 109th St. Nov. 2, 1911.
 Low water occurred at Governors Island at 10.42 a.m. High water at 4.25 p.m.
 Low water occurred at Hell Gate at 12.40 p.m. High water at 6.15 p.m.

Sample No.	Hour p.m.	Location of Samples		Tidal current	Temp. water	Per-cent land water	Oxygen
		Approximate	Exact				
			Feet below surface		Deg. C		U.C. per litre
2293	12.30	Slip foot E. 109 St.	Lat 40 47 24 Long 73 56 11	1 Ebb	14	32	2.22 35
2294	12.35	" " "	Lat 40 47 24 Long 73 56 11	15 Ebb	14.5	32	2.22 35
2295	1.30	" " "	Lat 40 47 24 Long 73 56 11	1 Flood	14	30	2.22 35
2296	1.35	" " "	Lat 40 47 24 Long 73 56 11	15 Flood	14.5	30	2.22 35
2297	2.30	" " "	Lat 40 47 24 Long 73 56 11	1 Flood	14	30	2.22 35
2298	2.35	" " "	Lat 40 47 24 Long 73 56 11	15 Flood	14	30	2.22 35
2299	4.00	" " "	Lat 40 47 24 Long 73 56 11	1 Flood	13.5	30	2.22 34
2300	4.05	" " "	Lat 40 47 24 Long 73 56 11	15 Flood	14	30	2.22 35

Ex. 94. P. 193

Nov. 3, 1911.

Dissolved Oxygen. East River, deep hole E. 134 St. and Slip E. 14 St.

Low water occurred at Governors Island at 11.30 a.m. High water at 5.12 p.m.

Low water occurred at Hell Gate at 1.10 p.m. High water at 7.02 p.m.

Sample No.	Hour a.m.	Location of Samples		Exact O	Feet below surface	Tidal Temp.		Per- cent water land		Oxygen per litre		Percent saturation
		Approximate				cur- rent	deg. C					
2301	9.30	East River 200' off E. 134 St.	Lat 40 47 56	1		2bb	13	24	5.11	79		
			Long 73 54 30									
2302	9.35	" ferry, deep hole "	Lat 40 47 56	40		2bb	12	22	5.39	84		
			Long 73 54 30									
2303	9.40	" " "	Lat 40 47 56	75		2bb	12	22	5.39	84		
			Long 73 54 30									
2304	11.00	Slip between foot E. 13 and	Lat 40 43 36	1		2bb	13	36	3.12	47		
		14 St. New York, inner end	Long 73 58 24									
2305	11.05	" " "	Lat 40 43 36	15		2bb	13	36	3.12	47		
			Long 73 58 24									

Ex. 94, P. 194

Nov. 8, 1911.

Disolved Oxygen. East River, deep hole at Old Ferry Pt. and
Stepping Stones.

High water occurred at Governors Island at 8.45 a.m. Low water at 3.25 p.m.

High water occurred at Ball Gate at 10.35 a.m. Low water at 5.05 p.m.

Sample No.	Hour P.M.	Location of Samples		Knot O	Feet below surface	Tidal Temp. Per- our- water cent rent Deg.C		Oxygen C.C. Percent per satura- water litre tion	
		Approximate							
2306	2.00	East River, deep hole $\frac{1}{2}$ mile S. of Old Ferry St.	Lat 40 46 18 Long 73 49 20	1	Hbb	12	24	5.46	84
2307	2.05	"	Lat 40 48 18 Long 73 49 20	50	Hbb	13	22	5.46	85
2308	2.10	"	Lat 40 49 18 Long 73 49 20	110	Hbb	13	22	5.46	86
2309	3.00	Long Is. Sound, $\frac{1}{2}$ mile west of Stepping Stones light	Lat 40 49 35 Long 73 46 59	1	Hbb	12	22	5.83	90
2310	3.05	"	Lat 40 49 35 Long 73 46 59	50	Hbb	13	22	5.83	91
2311	3.10	"	Lat 40 49 33 Long 73 46 59	100	Hbb	13	22	5.83	91

Ex. 94. P. 198

Nov. 9, 1911.

East River slips-DeGraw St. & vicinity.

Dissolved Oxygen.

High water occurred at Governors Island at 9.30 a.m. Low water at 4.20 p.m.

Sample No.	Hour a.m.	Location of Samples		East 0	Feet below surface	Tidal Temp. Per- cent		Oxygen
		Approximate				Sur- water	Land per	
						face	water	litre
								tion
2312	10.30	Slip E block east of DeGraw St.	Lat 40 41 16	1	Flood	13	30	2.78
		" " " "	Long 74 00 23					
2313	10.33	" " " "	Lat 40 41 16	15	Flood	13	30	2.78
		" " " "	Long 74 00 23					
2314	11.30	Slip at De Graw St.oklyn.	Lat 40 41 14	1	Ebb	13	30	2.78
		" " " "	Long 74 00 29					
2315	11.33	" " " "	Lat 40 41 14	15	Ebb	13	30	2.78
		" " " "	Long 74 00 29					

Ex. 94. P. 196

Dissolved Oxygen. Hudson River, Fort Washington Point. Nov. 10. 1911.
 High water occurred at Governors Island at 10.26 a.m. Low water at 5.15 p.m.
 High water at Hell Gate at 12.50 p.m.

Sample No.	Hour p.m.	Location of Samples		Exact o. " surface	Feet below surface	Tidal Temp. Per- cur- water cent rent Deg. C land		Oxygen U.C. Percent peratura- litre tion	
		Approximate				water	water		
2316	12.10	500' off Ft. Washington	Lat 40 50 58	1		Flood 11.5	56	5.00	71
			Long 73 56 57						
2317	12.18	" Ft. to S.W.	Lat 40 50 58	75		Flood 12	48	5.00	71
			Long 73 56 57						
2318	12.25	" "	Lat 40 50 58	180		Flood 12	48	5.00	71
			Long 73 56 57						

Ex. 94, p. 197

Ships in Harlem River and East River, Nov. 13, 1911.

Discolored Cuyden.

High water at Hell gate at 3.36 P.M.

Sample No.	Hour P.M.	Location of Sample		Depth in fathoms	Feet below surface	Tidal Temp. Per- cur- water cont- rent Deg. C		Oxygen per cent	Direction
		Approximate				Wind	Current		
2227	3.00	Slip S. of foot East 109 St.	Lat 40 47 24	1	Flood	21	30	8.22	33
		Harlem River	Long 73 54 11						
2228	3.03	Slip S. of foot East 109 St.	Lat 40 47 24	1 1/2	Flood	21	30	8.22	33
		Harlem River	Long 73 54 11						
2229	3.10	Slip S. of foot East 119 St.	Lat 40 47 40	1	Flood	21	30	8.22	33
		Harlem River	Long 73 54 47						
2230	3.20	Slip S. of foot East 119 St.	Lat 40 47 46	1 1/2	Flood	21	30	8.22	33
		Harlem River	Long 73 54 47						
2231	3.30	Slip at Fort Morris, East	Lat 40 48 20	1	Flood	21	30	8.78	41
		river	Long 73 54 07						
2232	3.36	Slip at Fort Morris, East	Lat 40 48 20	1 1/2	Flood	21	30	8.78	41
		river	Long 73 54 07						

Nov. 14, P. 199

334645

6463

Dissolved Oxygen. East River at Clason Pt. and L.I. Sound at
 Execution Rocks. November 14, 1911.
 Low water at Governors Island at 9 a.m. High water at 2.50 p.m. Low water
 at Hell Gate at 10.40 a.m.

Sample No.	Hour p.m.	Location of Samples		Exact, o	Feet below surface	Tidal Temp. Per- current Deg.C		Per- cent saturation	Oxygen C.C. per litre
		Approximate				rent	cent		
2333	2.00	Long Island sound at Execution Rocks	Lat 40 52 30 Long 73 44 16	1	Flood	10	20	6.67	98
2334	3.30	East river, midway between Clason Pt. and College Pt.	Lat 40 48 00 Long 73 51 11	1	Flood	10.5	26	4.72	69

Ex. 94. P. 200

Newark Bay. November 16, 1911.

Dissolved Oxygen.

Low water at Governors Island, at 10.06 a.m. High water at 4 p.m.

Sample No.	Hour P.M.	Location of Samples		Exact feet below surface	Tidal current	Temp. water	Per cent Deg.C	Per cent land water	Oxygen U.C. Percent per saturation
		Approximate							
2336	12.30	Newark bay, by bell buoy 2 in channel	Lat 40 40 12 Long 74 06 05	1	Ebb	6	70	5.56	70

Ex. 94. P. 201

Dissolved Oxygen.

Hudson River off West 23 St. and off Mt. St. Vincent.

November 16, 1911.

Low water at Governors Island at 11.3 A.M. High water at 4.57 P.M.

Sample No.	Hour P.M.	Approximate Location of Sample	Exact position	Feet below surface	Tidal Temp. Per- cent			Oxygen C.C. percent per saturation
					Sur- rent	water	deg. C	
2336	12.16	Hudson river off West 23 St. midstream	Lat 40 45 09 Long 74 01 00	1	8bb	9	76	4.72 61
2337	1.45	Hudson river off Mt. St. Vincent midstream	Lat 40 54 50 Long 73 55 15	1	8bb	8	88	6.67 61

Ex. 94. F. 808

Dissolved Oxygen. East River, Upper New York Bay, Lower New York Bay.
November 17, 1911.

High water at Governors Island at 8.25 a.m. Low water at 11.55 a.m. Low water at
Sandy Hook at 11.22 a.m. High water at 8.50 p.m.

Sample No.	Hour a.m.	Location of Samples	Feet		Tidal Temp. Per- our- rent	Deg.C	water cent land	per satura- tion	Oxygen
		Approximate	Exact	below surface					
2338	9.00	East River off East 23 St.	Lat 40 43 56	1	Ebb	9	46	4.12	86
		Midstream	Long 73 58 06						
2339	10.00	New York Bay by buoy QR	Lat 40 40 12	1	Ebb	9	44	4.72	66
		in channel	Long 74 03 13						
2340	11.00	New York Lower bay by buoy	Lat 40 31 42	1	Ebb	9	34	6.68	91
		A C 16 in channel	Long 74 00 34						
2341	11.30	New York Lower bay by buoy	Lat 40 29 54	1	Ebb	9.8	24	6.81	98
		A C 2 at outer end of Ambrose	Long 73 56 10						
		Channel and of Lower bay							

Ex. 94. P. 208

Disolved Oxygen East River off East 23 St., New York.
(Midstream) November 20, 1912.

High water at Governors Island at 7.30 a.m. Low water at 3.10 p.m.

Sample No.	Hour p.m.	Location of Sample		East of surface	Feet below surface	Tidal Temp. per- cent		Per- cent per surface	Oxygen
		Approximate	Exact	0		sur- rent	deg. C		
2342	1.00	East River, midstream, off East 23 St., New York	Lat 40 44 00 Long 73 55 00	1	Abb	9	20	4.12	87

Ex. 94. P. 204

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 95.

JAMES D. MAHER,
Commissioner.

Number of Bacteria in the Water. Upper Bay. March 23, 1909.
 High water occurred at Governors Island at 9.41 a.m. The wind was northwest with a
 velocity of 35 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Approximate	Exact	Feet below surface	Tidal current	Temp. water land	Percent bacteria per C.C.
				0			Deg. C	
1	11.40	About 2000 feet from Constable Hook		Lat 40 39 07 Long 74 04 53	1	Ebb	3	3,180
2	11.50	" " " "		Lat 40 39 07 Long 74 04 53	10	Ebb	3	6,360
3	1.00	Farther east than sample 1		Lat 40 39 03 Long 74 04 20	1	Ebb	3	25,400
4	1.10	" " " "		Lat 40 39 03 Long 74 04 20	10	Ebb	3	19,100
5	1.35	" " " "	3	Lat 40 39 06 Long 74 04 38	1	Ebb	3	15,900
6	1.45	" " " "	"	Lat 40 39 06 Long 74 04 38	20	Ebb	3.4	12,700
7	2.15	About 20 feet from spar buoy A		Lat 40 38 41 Long 74 03 49	1	Ebb	3	28,600
8	2.25	" " " "	"	Lat 40 38 41 Long 74 03 49	20	Ebb	3.2	14,100
9	2.50	About 600 feet off 71 St., Brooklyn		Lat 40 38 25 Long 74 02 10	1	Ebb	3	38,100
10	3.00	" " " "	"	Lat 40 38 25 Long 74 02 10	20	Ebb	3.2	26,500
11	3.35	About 200 feet farther out than sample 9		Lat 40 38 30 Long 74 02 22	1	Ebb	3.2	36,900
12	3.40	" " " " sample 9		Lat 40 38 30 Long 74 02 22	20	Ebb	3.4	21,600

James D. Mahler
 Commissioner

Complainants Exhibit No. 95.
 Ex. 95. P. 1

Number of Bacteria in the Water. Upper Bay. March 23, 1909.
 High water occurred at Governors Island at 9.41 a.m. The wind was northwest with a
 velocity of 25 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. Deg. C	Percent land water per C.C.	No. of Bacteria
		Approximate	Exact				
			0				
1	11.40	About 2000 feet from Constable Hook	Lat 40 39 07 Long 74 04 53	1	Ebb	3	3,180
2	11.50	" " " "	Lat 40 39 07 Long 74 04 53	10	Ebb	3	6,360
3	1.00	Farther east than sample 1	Lat 40 39 03 Long 74 04 53	1	Ebb	3	25,400
4	1.10	" " " "	Lat 40 39 03 Long 74 04 20	10	Ebb	3	19,100
5	1.35	" " " "	Lat 40 39 06 Long 74 04 38	1	Ebb	3	15,900
6	1.45	" " " "	Lat 40 39 06 Long 74 04 38	20	Ebb	3.4	12,700
7	2.15	About 20 feet from spar buoy A	Lat 40 38 41 Long 74 03 49	1	Ebb	3	38,600
8	2.25	" " " "	Lat 40 38 41 Long 74 03 49	20	Ebb	3.2	14,100
9	2.50	About 600 feet off 71 St., Brooklyn	Lat 40 38 25 Long 74 02 10	1	Ebb	3	38,100
10	3.00	" " " "	Lat 40 38 25 Long 74 02 10	20	Ebb	3.2	26,800
11	3.35	About 200 feet farther out than sample 9	Lat 40 38 30 Long 74 02 22	1	Ebb	3.2	36,900
12	3.40	" " " " sample 9	Lat 40 38 30 Long 74 02 22	20	Ebb	3.4	21,600

Ex. 95. P. 1

Number of Bacteria in the Water. Upper Bay. March 24, 1909.
 High water occurred at Governors Island at 10.46 p.m. The wind was east with a velocity
 of 5 miles per hour at 10.30 a.m., increasing to 20 miles per hour at 2.00 p.m.

Sample No.	Hour a.m.	Location of Samples		Exact	Feet below surface	Tidal current	Temp. water land	No. of Bacteria per C.C.
		Approximate						
13	10.30	About 200 feet east of spar buoy A		Lat 40 39 39 Long 74 03 43	1	Flood	2.8	15,700
14	10.40	" " " " " "	"	Lat 40 39 39 Long 74 03 43	20	Flood	3	25,300
15	11.00	Farther east than sample 13		Lat 40 39 35 Long 74 02 43	1	Flood	2.8	19,100
16	11.05	" " " " " "	"	Lat 40 39 35 Long 74 02 43	20	Flood	2.8	15,800
17	11.25	" " " " " "	15	Lat 40 39 33 Long 74 03 25	1	Flood	2.8	8,000
18	11.30	" " " " " "	"	Lat 40 39 33 Long 74 03 25	20	Flood	2.6	6,700
19	11.45	" " " " " "	17	Lat 40 39 32 Long 74 03 10	1	Flood	2.8	12,700
20	11.50	" " " " " "	"	Lat 40 39 32 Long 74 03 10	20	Flood	2.8	9,200
21	12.00	200 feet north of spar buoy 12 1/2		Lat 40 39 23 Long 74 03 18	1	Flood	3	14,000
22	12.05	" " " " " "	"	Lat 40 39 23 Long 74 03 18	20	Flood	3.2	8,700
23	12.50	" " " " " "	"	Lat 40 39 23 Long 74 03 18	1	Ebb	3	33,700
24	12.55	" " " " " "	"	Lat 40 39 23 Long 74 03 18	20	Ebb	3.2	14,000
25	1.30	Farther east than sample 21		Lat 40 39 16 Long 74 02 43	1	Ebb	3	28,000

Ex. 95. P. 2

March 24, 1909. (Continued.)

Upper Bay.

Number of Bacteria in the Water.

Sample No.	Hour P.M.	Location of Samples		Tidal current	Temp. water Deg. C.	Percent land water	No. of Bacteria per C.C.
		Approximate	Exact	Feet below surface			
26	1.38	Farther east than sample 21	Lat 40 39 18 Long 74 02 43	20	Ebb	3.2	16,800
27	2.18	Farther east than sample 26	Lat 40 39 35 Long 74 02 43	1	Ebb	3	19,100
28	2.30	" " " "	Lat 40 39 35 Long 74 02 43	20	Ebb	3.2	21,600
29	2.40	" " " "	Lat 40 39 33 Long 74 02 33	1	Ebb	3.2	31,800
30	2.45	" " " "	Lat 40 39 33 Long 74 02 33	20	Ebb	3.4	25,900
31	3.10	" " " "	Lat 40 39 22 Long 74 02 25	1	Ebb	3	33,100
32	3.15	" " " "	Lat 40 39 22 Long 74 02 25	20	Ebb	3.2	19,100
33	3.40	800 feet off Ft. St. Brooklyn	Lat 40 39 19 Long 74 02 15	1	Ebb	3	29,400
34	3.45	" " " "	Lat 40 39 19 Long 74 02 15	20	Ebb	3.2	26,900

Ex. 98. P. 3

Number of Bacteria in the Water. Upper Bay April 7th, 1909
 Low water occurred at Governors Island at 3.25 p.m. The wind was southwest with a velocity
 of 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Tidal current	Temp. water	Percent land water	Number of Bacteria per cc
		Approximate	Exact N. E. S. W.				
35	12.50	Liberty Is. boat pier at Battery	Lat 40 42 08 Long 74 01 00	surface Fbb			6,400
36	12.52	" Park	Lat 40 42 08 Long 74 01 00	1/2 Ebb			5,300
37	12.54	"	Lat 40 42 08 Long 74 01 00	1 Ebb			5,500
38	12.56	"	Lat 40 42 08 Long 74 01 00	2 Ebb			4,600
39	1.20	Pier at east end of Liberty Is.	Lat 40 41 21 Long 74 02 36	Surface Ebb			5,300
40	1.22	"	Lat 40 41 21 Long 74 02 36	1/2 Ebb			5,200
41	1.24	"	Lat 40 41 21 Long 74 02 36	1 Ebb			5,600
42	1.26	"	Lat 40 41 21 Long 74 02 36	2 Ebb			2,100
43	3.20	End of pier A. Hudson River	Lat 40 42 16 Long 74 01 08	Surface Ebb			10,800
44	3.22	"	Lat 40 42 16 Long 74 01 08	1/2 Ebb			9,800
45	3.24	"	Lat 40 42 16 Long 74 01 08	1 Ebb			6,400
46	3.26	"	Lat 40 42 16 Long 74 01 08	2 Ebb			4,200

Ex. 95. P. 4.

Number of bacteria in the water. Long Island Sound. April 12, 1908.

High water occurred at Sayvmore Island at 1.45 p.m. The wind was south with a velocity of

15 miles per hour until 9.00 a.m. From 9.00 a.m. the wind was southwest with a velocity

from 80 to 80 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Approximate	Depth in feet	Tidal current	Temp. water	Percent bacteria per C.C.
47	8.00	Greensport Harbor Bay 3		Lat 41 04 00 Long 72 51 00	1	55b	10
48	8.00	Greensport Harbor Bay 3		Lat 41 04 00 Long 72 51 00	20	55b	10
49	8.00	Gardiners Bay just inside Orient Point		Lat 41 09 00 Long 72 51 00	1	55b	10
50	8.00	Gardiners Bay just inside Orient Point		Lat 41 09 00 Long 72 51 00	20	55b	10
51	9.00	In Long Island Sound 1000 feet off		Lat 41 10 00 Long 71 17 00	1	55b	10
52	9.00	In Long Island Sound 1000 feet off		Lat 41 10 00 Long 71 17 00	20	55b	10
53	9.00	In Long Island Sound 1000 feet off		Lat 41 09 45 Long 71 17 00	1	55b	10
54	9.00	In Long Island Sound 1000 feet off		Lat 41 09 45 Long 71 17 00	20	55b	10
55	9.00	In Long Island Sound 1000 feet off		Lat 41 08 35 Long 71 17 00	1	55b	10
56	9.00	In Long Island Sound 1000 feet off		Lat 41 08 35 Long 71 17 00	20	55b	10
57	10.00	In Long Island Sound 1 1/2 mile off		Lat 41 08 45 Long 71 17 00	1	Flood	15
58	10.00	In Long Island Sound 1 1/2 mile off		Lat 41 08 45 Long 71 17 00	20	Flood	15

Ex. 96, P. 3.

Number of Bacteria in the Water. Long Island Sound. April 13, 1909. (Continued.)

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. water	Percent water land	No. of Bacteria per C.C.
		Approximate	Exact				
59	11.00	In Long Island Sound 1/2 mile off	Lat 41 00 00 Long 72 57 00	1	Flood	12	280
60	11.00	" " Jacobs Landing "	Lat 41 00 00 Long 72 57 00	20	Flood	12	104
61	12.00	In Long Island Sound 1/2 mile off	Lat 41 00 30 Long 72 48 00	1	Flood	14	240
62	12.00	" " Nevers Point "	Lat 41 00 30 Long 72 48 00	20	Flood	14	110
63	1.00	In Long Island Sound 1/2 mile off	Lat 40 59 45 Long 72 49 45	1	Flood	14	280
64	1.00	" " Nevers Point "	Lat 40 40 45 Long 72 49 45	20	Flood	14	140
65	2.00	In Long Island Sound 1/2 mile off	Lat 40 59 30 Long 72 49 45	1	Flood	16	280
66	2.00	" " Nevers Point Landing "	Lat 40 59 30 Long 72 49 45	20	Flood	14	140
67	3.00	In Long Island Sound 1/2 mile off	Lat 40 59 30 Long 72 49 45	1	Flood	16	440
68	3.00	" " St. Marys Point "	Lat 40 59 30 Long 72 49 45	20	Flood	16	280

Ex. 90. P. 6

Number of Bacteria in the Water. Long Island Sound. April 15, 1909.

Low water occurred at Governors Island at 10.00 a.m. The wind was northwest with a velocity from 5 to 15 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Exact "	Feet below surface	Tidal current	Temp. water Deg. C.	Percent land water	No. of Bacteria per C.C.
		Approximate							
69	4.15	Smithtown Bay	Lat 40 58 00	1	Flood	20	480		
70	4.15	"	Long 73 10 45	20	Flood	20	180		
71	5.00	Long Island Sound 1 mile off Eatons Point	Lat 40 58 00	1	Flood	20	360		
72	5.00	"	Long 73 10 45	20	Flood	20	360		
73	5.00	"	Long 73 22 30	20	Flood	20	120		
74	6.00	Long Island Sound 1 mile off Lloyd's Point	Lat 40 59 30	1	Flood	22	480		
75	6.00	"	Long 73 22 30	1	Flood	22	280		
76	7.00	Long Island Sound 1 mile off Mat-tinicoek Point	Lat 40 57 45	20	Flood	24	460		
77	8.00	"	Long 73 29 10	1	Flood	24	240		
78	8.00	"	Long 73 38 25	20	Flood	26	540		
79	9.00	Long Island Sound 1 mile off Pros-pect Point	Lat 40 56 20	1	Flood	26	320		
80	9.00	"	Long 73 38 25	1	Flood	30	1,080		
81	10.00	East River 500 feet off Clauson Point	Lat 40 52 45	20	Flood	30	540		
82	10.00	"	Long 73 44 25	1	Flood	36	2,230		
83	11.00	East River under Williamsburg Bridge	Lat 40 48 12	20	Flood	36	1,800		
84	11.00	"	Long 73 47 35	1	Flood	40	10,300		
		"	Lat 40 48 15	20	Flood	40	3,200		
		"	Long 73 50 50	1	Flood				
		"	Lat 40 42 49	20	Flood				
		"	Long 73 58 21	20	Flood				
		"	Lat 40 42 49	20	Flood				
		"	Long 73 58 21	20	Flood				

Number of Bacteria in the Water. The Narrows. April 19, 1909.
 Low water occurred at Governors Island at 1.35 p.m. The wind was southwest with a
 velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal rent	Temp. deg. C	Percent land water	No. of Bacteria per c.c.
		Approximate	Exact					
85	10.15	Near shore Fort Hamilton	Lat 40 36 27	1	Ebb			6,400
		"	Long 74 02 13		"			4,700
86	10.18	"	Lat 40 36 27	10	"			5,300
		"	Long 74 02 13		"			3,700
87	10.25	$\frac{1}{2}$ way across Narrows from Fort Hamilton	Lat 40 36 27	1	"			2,200
		"	Long 74 02 34	10	"			950
88	10.28	"	Lat 40 36 27	20	"			480
		"	Long 74 02 34	40	"			4,200
89	10.31	"	Lat 40 36 27	80	"			2,800
		"	Long 74 02 34	1	"			1,900
90	10.34	"	Lat 40 36 27	10	"			840
		"	Long 74 02 48	40	"			620
91	10.40	"	Lat 40 36 27	80	"			19,000
		"	Long 74 02 34	1	"			13,000
92	10.55	$\frac{1}{2}$ way across Narrows	Lat 40 36 25	10	"			8,500
		"	Long 74 02 48	20	"			
93	10.58	"	Lat 40 36 25	20	"			
		"	Long 74 02 48	40	"			
94	11.06	"	Lat 40 36 25	80	"			
		"	Long 74 02 48	1	"			
95	11.10	"	Lat 40 36 25	10	"			
		"	Long 74 02 48	20	"			
96	11.15	"	Lat 40 36 25	40	"			
		"	Long 74 02 48	80	"			
97	11.25	$\frac{1}{2}$ way across Narrows from Fort Hamilton	Lat 40 36 23	1	"			
		"	Long 74 03 02	10	"			
98	11.29	"	Lat 40 36 23	20	"			
		"	Long 74 03 02	40	"			
99	11.31	"	Lat 40 36 23	80	"			
		"	Long 74 03 02	1	"			

Ex. 95. P. 3.

Number of Bacteria in the Water. The Narrows. April 19, 1904.
(Continued)

Sample No.	Hour a.m.	Location of Samples	Approximate	Exact	Feet below surface	Tidal Temp. cur. rent	Temp. water deg. C	Percent land water	No. of bacteria per c.c.
100	11.35	1/2 way across Narrows from Fort Hamilton		Lat 40 36 23 Long 74 03 02	40	Ebb			2,800
101	11.40	"		Lat 40 36 23 Long 74 03 02	80	"			1,600
102	11.50	50 feet from Fort Wadsworth		Lat 40 36 21 Long 74 03 13	1	"			22,000
103	11.53	"		Lat 40 36 21 Long 74 03 13	10	"			17,000
104	12.00	"		Lat 40 36 21 Long 74 03 13	20	"			9,800
105	12.05	"		Lat 40 36 20 Long 74 03 14	40	"			2,200
106	3.32	Near shore Fort Hamilton		Lat 40 36 27 Long 74 02 13	1	Flood			4,200
107	3.35	"		Lat 40 36 27 Long 74 02 13	10	"			2,600
108	3.43	1/2 way across Narrows from Fort Hamilton		Lat 40 36 27 Long 74 02 34	1	"			3,700
109	3.46	"		Lat 40 36 27 Long 74 02 34	10	"			3,200
110	3.48	"		Lat 40 36 27 Long 74 02 34	20	"			2,000
111	3.51	"		Lat 40 36 27 Long 74 02 34	40	"			850
112	3.54	"		Lat 40 36 27 Long 74 02 34	80	"			340
113	4.00	1/4 way across Narrows		Lat 40 36 25 Long 74 02 48	1	"			2,800
114	4.03	"		Lat 40 36 25 Long 74 02 48	10	"			1,900
115	4.08	"		Lat 40 36 25 Long 74 02 48	20	"			2,600

Ex. 35. P. 3

Kushner of Bacteria in the Water. The Narrows. April 19, 1909.
(Continued).

Sample No.	Hour p.m.	Location of Samples		Tidal sur- rent	Temp. water deg. C	Percent land water	No. of bacteria per c.c.
		Approximate	Exact O	Year below surface			
116	4.07	1/2 way across Narrows	Lat 40 36 25 Long 74 02 48	40	Flood		850
117	4.10	"	Lat 40 36 25 Long 74 02 48	80	"		360
118	4.16	1/2 way across Narrows from Ft. Hamilton	Lat 40 36 23 Long 74 03 02	1	"		4,200
119	4.18	"	Lat 40 36 23 Long 74 03 02	10	"		3,900
120	4.20	"	Lat 40 36 23 Long 74 03 02	20	"		2,200
121	4.23	"	Lat 40 36 23 Long 74 03 02	40	"		1,200
122	4.25	"	Lat 40 36 23 Long 74 03 02	80	"		480
123	4.31	50 feet from Fort Weddworth	Lat 40 36 20 Long 74 03 14	1	"		5,600
124	4.34	"	Lat 40 36 20 Long 74 03 14	10	"		4,200
125	4.37	"	Lat 40 36 20 Long 74 03 14	20	"		2,600
126	4.40	"	Lat 40 36 20 Long 74 03 14	40	"		860

Ex. 98. P. 10.

April 22, 1909.

Number of Bacteria in the Water. East River.

High water occurred at Governors Island at 9.49 a.m. The wind was southwest with a velocity of 5 miles per hour from 8.05 a.m. till 1.55 p.m. From 1.55 p.m. the velocity was 15 miles per hour.

Sample No.	Hour a.m.	Location of Samples Approximate	Feet		Tidal Temp. our- water Deg.C	Percent land water	No. of Bacteria per c.c.
			East 0	West below surface			
127	8.05	30 feet off Pier 10 Manhattan	Lat 40 42 10	1	Flood		6,800
128	8.08	"	Long 74 00 28		"		7,400
129	8.12	"	Lat 40 42 10	20	"		5,300
130	8.17	"	Long 74 00 28		"		3,200
131	8.25	4 way across East River, Pier 10, Manhattan	Lat 40 42 07	1	"		7,700
132	8.28	"	Long 74 00 17		"		6,900
133	8.32	"	Lat 40 42 07	20	"		6,400
134	8.37	"	Long 74 00 17		"		5,800
135	8.45	4 way across East River	Lat 40 42 03	1	"		7,200
136	8.49	"	Long 74 00 11		"		5,600
137	8.52	"	Lat 40 42 03	20	"		5,800
138	8.57	"	Long 74 00 11		"		5,700
139	9.10	4 way across East River, Pier 10, Manhattan	Lat 40 42 06	1	"		10,000

Ex. 96, P. 11.

April 25, 1909.

Number of Bacteria in the Water. East River. (Continued)

Sample No.	Hour a.m.	Location of Sample	Approximate	Depth	Feet below surface	Tidal current	Temp. water	Percent land water	No. of bacteria per c.c.
140	9.15	1/2 way across East River, Pier 10, Manhattan		Lat 40 48 00 Long 74 00 06	10	Flood			7,900
141	9.16	"		Lat 40 48 00 Long 74 00 06	20	"			7,400
142	9.18	"		Lat 40 48 00 Long 74 00 06	40	"			6,400
143	9.20	50 feet off Pier, Brooklyn.		Lat 40 41 57 Long 74 00 06	1	"			13,000
144	9.25	"		Lat 40 41 57 Long 74 00 06	10	"			8,300
145	9.27	"		Lat 40 41 57 Long 74 00 06	20	"			4,900
146	9.42	"		Lat 40 41 57 Long 74 00 06	40	"			4,800
147	1.00	80 feet off Pier, Manhattan		Lat 40 42 10 Long 74 00 25	1	Ebb			10,000
148	1.08	"		Lat 40 42 10 Long 74 00 25	10	"			7,900
149	1.08	"		Lat 40 42 10 Long 74 00 25	20	"			6,400
150	1.08	"		Lat 40 42 10 Long 74 00 25	36	"			4,800
151	1.12	1/2 way across East River, Pier 10, Manhattan		Lat 40 42 07 Long 74 00 17	1	"			8,000
152	1.14	"		Lat 40 42 07 Long 74 00 17	10	"			7,400
153	1.17	"		Lat 40 42 07 Long 74 00 17	20	"			6,400
154	1.20	"		Lat 40 42 07 Long 74 00 17	40	"			8,300
155	1.25	1/2 way across East River		Lat 40 42 03 Long 74 00 11	1	"			10,000

Ex. 95. P. 12.

Number of Bacteria in the Water, East River, April 22, 1909.
(Continued)

Sample No.	Hour p.m.	Location of Sample		East, S.	Feet below surface	Tidal current, feet	Temp. water, deg. C.	Percent land water	No. of Bacteria per C.C.
		Approximate							
156	1.27	1 way across East River	Lat 40 48 03 Long 74 00 11	10	Ebb				9,400
157	1.30	"	Lat 40 48 03 Long 74 00 11	20	Ebb				6,400
158	1.33	"	Lat 40 48 03 Long 74 00 11	40	Ebb				8,300
159	1.40	1 way across East River from Pier 10, Manhattan	Lat 40 48 03 Long 74 00 06	1	Ebb				10,200
160	1.42	"	Lat 40 48 03 Long 74 00 06	10	Ebb				9,600
161	1.45	"	Lat 40 48 03 Long 74 00 06	20	Ebb				8,800
162	1.48	"	Lat 40 48 03 Long 74 00 06	40	Ebb				8,300
163	1.55	50 feet off Pier 10, Brooklyn	Lat 40 41 37 Long 73 59 59	1	Ebb				12,800
164	1.57	"	Lat 40 41 37 Long 73 59 59	10	Ebb				10,000
165	2.00	"	Lat 40 41 37 Long 73 59 59	20	Ebb				7,900
166	2.03	"	Lat 40 41 37 Long 73 59 59	40	Ebb				7,600

Ex. 98, P. 13.

Number of Bacteria in the Water. Kill Van Kull. April 26, 1908.

High water occurred at Governors Island at 1.39 p.m. The wind was northeast from 9.50 a.m. until 11.00 a.m. with a velocity of 10 miles per hour. From 3.04 p.m. to 4.10 p.m. the wind was northeast with a velocity of 15 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Exact	Feet below surface	Tidal Temp. our water deg. C	Percent land water	No. of Bacteria per C.C.
		Approximate						
167	9.50	20 feet off Columbia Oil Co. Pier, Bayonne	Lat 40 39 02	1	Flood			6,400
168	9.53	"	Long 74 05 26	10	"			4,200
169	9.57	"	Lat 40 39 02	20	"			3,700
170	10.03	$\frac{1}{2}$ way from Bayonne	Long 74 05 26	1	"			5,300
171	10.05	"	Lat 40 39 00	10	"			3,200
172	10.08	"	Long 74 05 26	20	"			2,600
173	10.12	"	Lat 40 39 00	40	"			1,600
174	10.17	$\frac{1}{2}$ way across Kill Van Kull	Long 74 05 26	1	"			7,400
175	10.19	"	Lat 40 38 57	10	"			6,400
176	10.23	"	Long 74 05 25	20	"			4,200
177	10.28	"	Lat 40 38 57	40	"			3,200
178	10.33	$\frac{1}{2}$ way across from Bayonne	Long 74 05 25	1	"			10,000
179	10.35	"	Lat 40 38 54	10	"			7,900
180	10.38	"	Long 74 05 24	20	"			5,800

Ex. 95. P. 14.

April 26, 1909.

Number of Bacteria in the Water. Kill Van Kull.
(Continued)

Sample No.	Hour a.m.	Location of Samples	Approximate	Feet		Tidal current	Temp. water	Percent land water	No. of bacteria per C.C.
				Exact	below surface				
181	10.45	2 way across from Bayonne		Lat 40 39 54 Long 74 05 24	40	Flood			4,900
182	10.55	20 feet off dock foot Jersey St. New Brighton, S.I.		Lat 40 38 51 Long 74 05 23	1	Flood			12,900
183	11.00	"		Lat 40 38 51 Long 74 05 23	10	Flood			7,400
184	3.04	20 ft. from Columbia Oil Co. Pier Bayonne		Lat 40 39 02 Long 74 05 26	1	Ebb			8,500
185	3.07	"		Lat 40 39 02 Long 74 05 26	10	"			6,900
186	3.10	"		Lat 40 39 02 Long 74 05 26	20	"			4,200
187	3.18	1 way across Kill Van Kull from Bayonne		Lat 40 39 02 Long 74 05 26	1	"			7,900
188	3.22	"		Lat 40 39 00 Long 74 05 26	10	"			6,900
189	3.25	"		Lat 40 39 00 Long 74 05 26	20	"			6,800
190	3.28	"		Lat 40 39 00 Long 74 05 26	40	"			3,700
191	3.36	1 way across Kill Van Kull		Lat 40 38 57 Long 74 05 25	1	"			10,600
192	3.39	1 way across Kill Van Kull		Lat 40 38 57 Long 74 05 25	10	"			8,500
193	3.42	"		Lat 40 38 57 Long 74 05 25	20	"			6,400
194	3.45	"		Lat 40 38 57 Long 74 05 25	40	"			4,800
195	3.52	1 way across Kill Van Kull from Bayonne		Lat 40 38 54 Long 74 05 24	1	"			13,000
196	3.54	"		Lat 40 38 54 Long 74 05 24	10	"			10,600
197	3.57	"		Lat 40 38 54 Long 74 05 24	20	"			9,000

Ex. 95. P. 15.

Number of Bacteria in the Water. Kill Van Kull April 26, 1909.
(Continued)

Sample No.	Hour p.m.	Location of Samples		Exact " "	Feet below surface	Tidal current	Temp. water Deg. C	Percent land water		No. of Bacteria per C.C.
		Approximate								
198	4.00	2 way across Kill Van Kull	Lat 40 38 54 Long 74 06 24	40	Ebb					6,400
199	4.05	80 feet off dock foot Jersey	Lat 40 38 51 Long 74 06 23	1	"					15,900
200	4.10	St. New Brighton, S.I. " "	Lat 40 38 51 Long 74 06 23	10	"					11,000

Ex. 95. P. 16

Enter of Bacteria in the Water. Harlem River. April 27, 1909.
 High water occurred at Governors Island at 2.32 P.M. The wind was northwest with a
 velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. cur-water	Percent land water	No. of Bacteria per C.C.
		Approximate	Exact				
201	11.06	At Third Av. Bridge 10 feet from east shore	Lat 40 28 27 Long 73 56 56	1	Flood		20,000
202	11.08	"	Lat 40 29 27 Long 73 56 56	10	"		13,000
203	11.16	At Third Av. Bridge 1/4 way across from east shore	Lat 40 48 26 Long 73 56 56	1	"		19,000
204	11.19	"	Lat 40 48 26 Long 73 56 56	10	"		14,000
205	11.22	"	Lat 40 48 26 Long 73 56 56	20	"		10,000
206	11.30	At Third Av. bridge, midstream	Lat 40 48 26 Long 73 56 57	1	"		15,000
207	11.32	"	Lat 40 48 26 Long 73 56 57	10	"		8,500
208	11.35	"	Lat 40 48 26 Long 73 56 57	20	"		6,400
209	11.44	At Third Av. bridge, 1/2 way across from east shore	Lat 40 48 26 Long 73 56 59	1	"		13,000
210	11.47	"	Lat 40 48 26 Long 73 56 59	10	"		9,500
211	11.50	"	Lat 40 48 26 Long 73 56 59	20	"		6,400
212	12.00	At Third Av. Bridge, 10 feet from west shore	Lat 40 48 26 Long 73 56 00	1	"		19,000
213	12.02	"	Lat 40 48 26 Long 73 56 00	20	"		14,000
214	12.08	"	Lat 40 48 26 Long 73 56 00	38	"		7,400

Ex. 95, P. 17

Number of Bacteria in the Water, Harlem River. April 27, 1906.
(Continued)

Sample No.	Hour p.m.	Location of Samples		East 0	Feet below surface	Tidal current	Temp. air	No. of bacteria per c.c.
		Approximate						
215	4.34	At Third Av. Bridge 10 feet from east shore	Lat 40 48 27 Long 73 56 56	1	1	Ebb		13,000
216	4.36	"	Lat 40 48 27 Long 73 56 56	10	"	"		9,500
217	4.42	At Third Av. Bridge $\frac{1}{2}$ way across from east shore	Lat 40 48 26 Long 73 56 56	1	"	"		11,000
218	4.44	"	Lat 40 48 26 Long 73 56 56	10	"	"		8,500
219	4.46	"	Lat 40 48 26 Long 73 56 56	20	"	"		8,300
220	4.50	At Third Av. Bridge, midstream	Lat 40 48 26 Long 73 56 57	1	"	"		9,500
221	4.52	"	Lat 40 48 26 Long 73 56 57	10	"	"		7,400
222	4.54	"	Lat 40 48 26 Long 73 56 57	20	"	"		4,250
223	4.58	At Third Av. Bridge, $\frac{2}{3}$ way across from east shore	Lat 40 48 26 Long 73 56 58	1	"	"		12,000
224	5.00	"	Lat 40 48 26 Long 73 56 58	10	"	"		9,000
225	5.02	"	Lat 40 48 26 Long 73 56 58	20	"	"		6,400
226	5.06	At Third Av. Bridge, 10 feet from west shore	Lat 40 48 25 Long 73 56 59	1	"	"		17,000
227	5.08	"	Lat 40 48 25 Long 73 56 59	10	"	"		11,000
228	5.10	"	Lat 40 48 25 Long 73 56 59	15	"	"		9,400

Ex. 98, P. 18.

Number of Boats in the water. Hudson River. May 3, 1900
Low water occurred at Governors Island at 12.00 P. M. The wind was southeast with a velocity of
from 50 to 60 miles per hour.

Sample No.	Hour P.M.	Location of Sample	Exact	Feet below surface	Tidal current	Temp. water Deg. C	Percent land water	Number of Boats in per sq.
229	12.06	50 feet off pier on New Jersey shore opposite Riverdale Sta.	Lat 40 54 14 Long 73 56 56	1	ebb			9,800
230	12.06	50 feet off pier on New Jersey shore opposite Riverdale Sta.	Lat 40 54 14 Long 73 56 56	10	ebb			9,800
231	12.11	50 feet off pier on New Jersey shore opposite Riverdale Sta.	Lat 40 54 14 Long 73 56 56	16	ebb			4,400
232	12.16	1/4 way across Hudson River from New Jersey shore	Lat 40 54 12 Long 73 56 42	1	ebb			9,800
233	12.20	1/4 way across Hudson River from New Jersey shore	Lat 40 54 12 Long 73 56 42	10	ebb			4,900
234	12.26	1/4 way across Hudson River from New Jersey shore	Lat 40 54 12 Long 73 56 42	20	ebb			3,900
235	1.00	1/2 way across Hudson River	Lat 40 54 06 Long 73 56 26	1	ebb			6,000
236	1.06	1/2 way across Hudson River	Lat 40 54 06 Long 73 56 26	10	ebb			9,800
237	1.06	1/2 way across Hudson River	Lat 40 54 06 Long 73 56 26	20	ebb			4,600
238	1.12	1/2 way across Hudson River	Lat 40 54 06 Long 73 56 26	30	ebb			2,900
239	1.23	3/4 way across Hudson River from New Jersey shore	Lat 40 54 06 Long 73 56 10	1	ebb			6,400
240	1.29	3/4 way across Hudson River from New Jersey shore	Lat 40 54 06 Long 73 56 10	10	ebb			6,400
241	1.36	3/4 way across Hudson River from New Jersey shore	Lat 40 54 06 Long 73 56 10	20	ebb			4,800
242	1.37	3/4 way across Hudson River from New Jersey shore	Lat 40 54 06 Long 73 56 10	40	ebb			3,900

Ex. 95. P. 19.

May 3, 1909.

Number of Bacteria in the Water, Hudson River. (Continued)

Sample No.	Hour p.m.	Location of Samples		Heat ° C.	Feet below surface	Tidal current	Temp. water	Percent bacteria in water	No. of bacteria per C.C.
		Location							
243	1.04	30 feet off pier at Riverdale Station	Lat 40 54 03 Long 73 14 37	1	886				12,000
244	1.07	"	Lat 40 54 03 Long 73 14 37	10	"				8,000
245	1.16	80 feet off pier New Jersey opposite Riverdale Station	Lat 40 54 14 Long 73 15 50	1	Flood				4,000
246	1.17	"	Lat 40 54 14 Long 73 15 50	10	"				3,000
247	1.20	"	Lat 40 54 14 Long 73 15 50	18	"				3,000
248	1.27	1/2 way across Hudson from New Jersey shore	Lat 40 54 12 Long 73 15 45	1	"				4,000
249	1.39	"	Lat 40 54 12 Long 73 15 45	10	"				4,000
250	1.52	"	Lat 40 54 12 Long 73 15 45	20	"				2,000
251	2.42	1/2 way across Hudson River	Lat 40 54 03 Long 73 15 29	1	"				2,000
252	3.44	"	Lat 40 54 08 Long 73 15 29	10	"				4,000
253	3.47	"	Lat 40 54 08 Long 73 15 29	20	"				3,000
254	3.50	"	Lat 40 54 08 Long 73 15 29	30	"				3,000
255	3.59	1/2 way across Hudson River from New Jersey shore	Lat 40 54 04 Long 73 15 10	1	"				6,000
256	4.02	"	Lat 40 54 04 Long 73 15 10	20	"				6,400
257	4.08	"	Lat 40 54 04 Long 73 15 10	30	"				3,000

Ex. 95. P. 80.

May 3, 1909.

Number of Bacteria in the Water. (Continued) Hudson River.

Sample No.	Hour p.m.	Location of Samples		Exact	Feet below surface	Tidal current	Temp. water	Percent land water	No. of bacteria per C.C.
		Approximate		O	"	rent	Def.C		
258	6.08	1/2 way across Hudson River from New Jersey shore 30 feet off pier at Riverdale Station, N.Y.C.R.R.	from	Lat 40 54 06	40	Flood			4,200
				Long 73 56 10					
259	6.16			Lat 40 54 03	1	Flood			7,400
				Long 73 54 57		"			
260	6.20			Lat 40 54 03	10				5,800
				Long 73 54 57					

Ex. 95. P. 21.

Number of Bacteria in the Water. Hudson River. May 4, 1909.
 Low water occurred at Governors Island at 1.53 p.m. The wind was southwest with a
 velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water Deg.C	Percent lake water	No. of bacteria per C.C.
		Approximate	Knot					
261	10.00	Hudson River midstream opp't. Riverdale Station, N.Y.C.R.R.	Lat 40 54 08 Long 73 55 28	1	Ebb			7,400
262	10.03	"	Lat 40 54 08 Long 73 55 28	10	"			5,800
263	10.05	"	Lat 40 54 08 Long 73 55 28	30	"			3,700
264	0.20	1000 feet off East shore opposite Spuyten Duyvil Creek.	Lat 40 52 48 Long 73 55 45	1	"			5,800
265	10.22	"	Lat 40 52 48 Long 73 55 45	10	"			4,700
266	10.24	"	Lat 40 52 48 Long 73 55 45	30	"			3,200
267	10.34	1000 ft. off East shore Inwood Station, N.Y.C.R.R.	Lat 40 52 13 Long 73 56 09	1	"			6,300
268	10.36	"	Lat 40 52 13 Long 73 56 09	10	"			4,200
269	10.37	"	Lat 40 52 13 Long 73 56 09	30	"			2,600
270	10.37	500 ft. off East shore opposite Port Washington Pt.	Lat 40 51 02 Long 73 56 51	1	"			5,400
271	10.58	"	Lat 40 51 02 Long 73 56 55	10	"			4,700
272	11.00	"	Lat 40 51 02 Long 73 56 55	30	"			4,200
273	11.14	1000 ft. off East shore opposite site W. 167 St.	Lat 40 50 14 Long 73 57 09	1	"			5,800
274	11.15	"	Lat 40 50 14 Long 73 57 09	10	"			5,400

Ex. 95. 2. 22.

May 4, 1909.

Number of Bacteria in the Water. Hudson River. (Continued)

Sample No.	Hour a.m.	Location of Samples		Exact " "	Feet below surface	Tidal current	Temp. water Deg. C.	Percent land water	No. of bacteria per C.C.
		Approximate							
275	11.17	1000 ft. off East shore opposite W. 157 St.	Lat 40 50 14 Long 73 57 09	30	Ebb				3,700
276	11.47	1000 feet off East shore opposite W. 92 St.	Lat 40 47 44 Long 73 56 58	1	Ebb				6,600
277	11.48	" " "	Lat 40 47 44 Long 73 56 58	10	"				5,300
278	11.50	" " "	Lat 40 47 44 Long 73 56 58	30	"				2,800
279	12.20	1000 feet off East shore opposite W. 62 St.	Lat 40 46 37 Long 73 59 51	1	"				7,400
280	12.21	" " "	Lat 40 46 37 Long 73 59 51	10	"				5,800
281	12.23	" " "	Lat 40 46 37 Long 73 59 51	30	"				3,700
282	12.43	1000 feet off East shore opposite W. 42 St.	Lat 40 45 50 Long 74 00 22	1	"				8,500
283	12.44	" " "	Lat 40 45 50 Long 74 00 22	10	"				7,600
284	12.46	" " "	Lat 40 45 50 Long 74 00 22	30	"				3,200
285	1.04	200 feet off East shore opposite W. 23 St.	Lat 40 45 03 Long 74 00 43	1	"				9,500
286	1.06	" " "	Lat 40 45 03 Long 74 00 43	10	"				7,900
287	1.07	" " "	Lat 40 45 03 Long 74 00 43	30	"				4,200
288	1.22	200 feet off East shore opposite Site Onevevort St.	Lat 40 44 21 Long 74 00 51	1	"				6,400
289	1.23	" " "	Lat 40 44 21 Long 74 00 51	10	"				8,000

Ex. 95. P. 23.

Number of Bacteria in the Water. Hudson River. May 4, 1909.
(Continued)

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal current	Temp. water 39 F.C	Percent land water	No. of bacteria per 5 C.
		Approximate	Exact					
290	1.25	200 feet off East shore opposite Gansevoort St.	Lat 40 44 21 Long 74 00 51	30	Ebb			3,600
291	1.40	200 feet off East shore, oppt pier 37 Charlton St.	Lat 40 43 41 Long 74 00 55	1	"			9,000
292	1.41	"	Lat 40 43 41 Long 74 00 55	10	"			4,200
293	1.43	"	Lat 40 43 41 Long 74 00 55	30	"			1,700
294	2.03	200 feet off East shore, oppt pier 31, Duane St.	Lat 40 43 06 Long 74 01 01	1	"			9,500
295	2.04	"	Lat 40 43 06 Long 74 01 01	10	"			9,000
296	2.06	"	Lat 40 43 06 Long 74 01 01	30	"			5,300
297	2.16	300 feet off East shore, oppt Liberty St.	Lat 40 42 41 Long 74 01 03	1	"			9,500
298	2.17	"	Lat 40 42 41 Long 74 01 03	10	"			7,900
299	2.18	"	Lat 40 42 41 Long 74 01 03	30	"			4,600
300	2.28	100 feet off East shore, oppt pier A	Lat 40 42 16 Long 74 01 09	1	"			10,500
301	2.30	"	Lat 40 42 16 Long 74 01 09	10	"			8,500
302	2.32	"	Lat 40 42 16 Long 74 01 09	30	"			4,200
303	2.45	500 feet West of Castle Willam Governor's Island	Lat 40 41 35 Long 74 01 19	1	"			6,800
304	2.47	"	Lat 40 41 35 Long 74 01 19	10	"			4,800
305	2.50	"	Lat 40 41 35 Long 74 01 19	30	"			2,600

Ex. 95. 2. 24

Number of Bacteria in the Water. Newark Bay and
Passaic River
 May 13, 1909.
 High water at Governors Island at 8.40 P. M. The wind until 1.00 P. M. was south with a
 velocity of 10 miles per hour. At 3.45 P. M. the velocity was 40 miles per hour.

Sample No.	Hour A.M.	Location of Samples		Knots	Feet		Tidal current	Temp. water Deg. C	Percent land water	Number of Bacteria per cc.
		Approximate			g	l				
306	10.45	200 feet from Bergen Point shore at C.R.R. of N.J. bridge	Lat 40 39 17 Long 74 08 25	1			Flood			6,400
307	10.47	200 feet from Bergen Point shore at C.R.R. of N.J. bridge	Lat 40 39 17 Long 74 08 06	10			"			5,300
308	10.53	1/2 way across Newark Bay near drawbridge C.R.R. of N.J.	Lat 40 39 17 Long 74 08 46	1			"			4,800
309	10.55	1/2 way across Newark Bay near drawbridge C.R.R. of N.J.	Lat 40 39 17 Long 74 08 46	10			"			3,700
310	10.57	1/2 way across Newark Bay near drawbridge C.R.R. of N.J.	Lat 40 39 17 Long 74 08 46	20			"			3,200
311	11.03	1/2 way across Newark Bay on line C.R.R. of N.J. bridge	Lat 40 39 17 Long 74 09 14	1			"			2,900
312	11.05	1/2 way across Newark Bay on line C.R.R. of N.J. bridge	Lat 40 39 17 Long 74 09 14	10			"			2,300
313	11.10	1/2 way across Newark Bay from east shore	Lat 40 39 17 Long 74 09 40	1			"			5,400
314	11.12	1/2 way across Newark Bay from east shore	Lat 40 39 17 Long 74 09 40	10			"			4,200
315	11.18	200 feet from west shore Elizabethport	Lat 40 39 18 Long 74 10 02	1			"			6,700
316	11.20	200 feet from west shore Elizabethport	Lat 40 39 18 Long 74 10 02	10			"			5,800
317	11.35	At red bell buoy in chan- nel between C.R.R. of N.J. and B. & O. R.R. bridge	Lat 40 40 15 Long 74 08 10	1			"			3,600

Number of bacteria in water, Newark Bay and Passaic River, May 19, 1909.

High water at Governors Island at 8.40 p.m. The wind until 1.00 p.m. was south with a velocity of 10 miles per hour. At 3.48 p.m. the velocity was 40 miles per hour.

Sample No.	Date A.M.	Location of Samples Approximate	Feet		Tidal Current	Temp. water deg. c.	Percent land water	No. of bacteria per c.c.
			Exact	Fast below surface				
218	11.37	At red bell buoy in channel between C.R.R. of N.J. and N. & O.R.R. bridge	Lat 40 40 15 Long 74 09 10	10	Flood			3,100
219	11.40	At red bell buoy in channel between C.R.R. of N.J. and N. & O.R.R. bridge	Lat 40 40 15 Long 74 09 10	20	"			3,100
220	12.00 P.M.	At drawbridge N. & O.R.R. bridge in channel of bay	Lat 40 41 56 Long 74 07 18	1	"			6,400
221	12.08	At drawbridge N. & O.R.R. bridge in channel of bay	Lat 40 41 56 Long 74 07 18	10	"			8,000
222	12.08	At drawbridge N. & O.R.R. bridge in channel of bay	Lat 40 41 56 Long 74 07 18	20	"			2,600
223	12.20	Passaic River at drawbridge N.Y. and Newark R.R. in channel	Lat 40 43 21 Long 74 07 18	1	"			12,800
224	12.28	Passaic River at drawbridge N.Y. and Newark R.R. in channel	Lat 40 43 21 Long 74 07 18	10	"			10,000
225	12.39	Passaic River just above P.R.R. freight bridge	Lat 40 44 12 Long 74 09 48	1	"			18,000
226	12.40	Passaic River just above P.R.R. freight bridge below Newark	Lat 40 44 10 Long 74 09 48	10	"			12,000

Ex. 98, J. 26.

May 12, 1909.

Swamp Bay and
Passaic River

Number of Bacteria in Water

High water at Governors Island at 2.40 P. M. The wind until 1.02 P. M. was south with a velocity of 10 miles per hour. At 3.45 P. M. the velocity was 40 miles per hour.

Sample
No. Hour P.M. Location of Samples

Sample No.	Hour P.M.	Approximate	East	Feet below surface	Tidal current	Temp. water	Percent land	Number of Bacteria
327	1.00	Passaic River just below P.R.R. passenger bridge in Newark	Lat 40 44 49 Long 74 09 56	1	Flood			24,000
328	1.02	Passaic River just below P.R.R. passenger bridge in Newark	Lat 40 44 49 Long 74 09 56	10	"			11,000
329	3.10	Passaic River just below P.R.R. passenger bridge in Newark	Lat 40 44 49 Long 74 09 56	1	Ebb			60,000
330	3.12	Passaic River just below P.R.R. passenger bridge in Newark	Lat 40 44 49 Long 74 09 56	10	"			32,000
331	3.33	Passaic River just above P.R.R. freight bridge below Newark	Lat 40 44 10 Long 74 09 48	1	"			26,000
332	3.36	Passaic River just above P.R.R. freight bridge below Newark	Lat 40 44 10 Long 74 09 48	10	"			21,000
333	3.45	Passaic River at drawbridge N.Y. & Newark R.R. in channel	Lat 40 43 21 Long 74 07 18	1	"			18,000
334	3.47	Passaic River at drawbridge N.Y. & Newark R.R. in channel	Lat 40 43 21 Long 74 07 18	10	"			18,000
335	4.00	At drawbridge of N. & O.R.R. bridge in channel of Newark Bay	Lat 40 41 56 Long 74 07 15	1	"			24,000
336	4.02	At drawbridge of N. & O.R.R. bridge in channel of Newark Bay	Lat 40 41 56 Long 74 07 15	10	"			13,000
337	4.04	At drawbridge of N. & O.R.R. bridge in channel of Newark Bay	Lat 40 41 56 Long 74 07 15	20	"			8,800

Ex. 96, P. 27.

Number of Bacteria in Water
 Newark Bay and
 Passaic River
 May 13, 1909
 High water at Governors Island at 2.40 p. m. The wind until 1.02 p. m. was south with a
 velocity of 10 miles per hour. At 3.45 p. m. the velocity was 40 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Exact	Feet below current surface	Tidal Temp. Percent Deg.C water	Number of Bacter- ia per CC.
		Approximate	Lat				
338	4.20	At red bell buoy in channel in Bay between C.R.R. of N.J. and B. & O. R. R. bridges	Lat 40 40 15 Long 74 08 10	1	Ebb		8,500
339	4.22	At red bell buoy in channel in Bay between C.R.R. of N.J. and B. & O. R. R. bridges	Lat 40 40 15 Long 74 08 10	10	"		5,700
340	4.24	At red bell buoy in channel in Bay between C.R.R. of N.J. and B. & O. R. R. bridges	Lat 40 40 15 Long 74 08 10	20	"		4,200
341	4.35	200 feet from Bergen Point shore at C.R.R. of N. J. bridge	Lat 40 39 17 Long 74 08 26	1	"		8,400
342	4.37	200 feet from Bergen Point shore at C.R.R. of N. J. bridge	Lat 40 39 17 Long 74 08 26	10	"		6,200
343	4.42	At drawbridge C.R.R. of N.J. in channel about 1/2 way across Bay	Lat 40 39 17 Long 74 08 46	1	"		5,300
344	4.44	At drawbridge C.R.R. of N.J. in channel about 1/2 way across Bay	Lat 40 39 17 Long 74 08 46	10	"		4,200
345	4.46	At drawbridge C.R.R. of N.J. in channel about 1/2 way across Bay	Lat 40 39 17 Long 74 08 46	20	"		2,800
346	4.51	1/2 way across Newark Bay on line C.R.R. of N. J. Bridge	Lat 40 39 17 Long 74 09 14	1	"		4,700
347	4.53	1/2 way across Newark Bay on line C.R.R. of N. J. Bridge	Lat 40 39 17 Long 74 09 14	10	"		3,500

Ex. 95. P. 28

Number of Bacteria in Water Newark Bay and
Passaic River May 13, 1909

High water at Governors Island at 2.40 p. m. The wind until 1.02 p. m. was south with a
velocity of 10 miles per hour. At 3.45 p. m. the velocity was 40 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Exact	Feet below surface		Tidal Current Deg.	Temp. water	Percent land water	Number of Bacteria per cc.
		Approximate			0	"				
348	4.58	1/2 way across Newark Bay from east shore	Lat 40 39 17	1	2bb					6,800
			Long 74 09 40							
349	5.00	1/2 way across Newark Bay from east shore	Lat 40 39 17	10	"					6,500
			Long 74 09 40							

Ex. 95. P. 29

Number of Bacteria in the Water
Hudson River May 11, 1909.
High water occurred at Governors Island at 12.21 p. m. The wind was north with a velocity of
40 miles per hour.

Sample No.	Hour a. m.	Location of Samples	Exact	Feet		Temp. Percent	Number of Bacteria
				0	"	below Current water land	per cc.
		Approximate			surface	deg. C	
350	9.14	50 feet off Pier A, Hudson River	Lat 40 42 16 Long 74 01 08	1	2bb		17,000
351	9.15	80 feet off Pier A, Hudson River	Lat 40 42 16 Long 74 01 08	10	"		12,500
352	9.16	50 feet off Pier A, Hudson River	Lat 40 42 16 Long 74 01 08	20	"		9,700
353	9.18	50 feet off Pier A, Hudson River	Lat 40 42 16 Long 74 01 08	40	"		7,300
354	9.23	1 way across Hudson River from Pier A	Lat 40 42 17 Long 74 01 20	1	"		14,500
355	9.24	1 way across Hudson River from Pier A	Lat 40 42 17 Long 74 01 20	10	"		10,500
356	9.25	1 way across Hudson River from Pier A	Lat 40 42 17 Long 74 01 20	20	"		8,400
357	9.27	1 way across Hudson River from Pier A	Lat 40 42 17 Long 74 01 20	40	"		6,500
358	9.32	1 way across Hudson River	Lat 40 42 19 Long 74 01 34	1	"		11,000
359	9.33	1 way across Hudson River	Lat 40 42 19 Long 74 01 34	10	"		9,500
360	9.34	1 way across Hudson River	Lat 40 42 19 Long 74 01 34	20	"		8,500
361	9.36	1 way across Hudson River	Lat 40 42 19 Long 74 01 34	40	"		5,300

Ex. 98, p. 30.

Number of Bacteria in the Water Hudson River May 11, 1909
 High water occurred at Governors Island at 12.21 p. m. The wind was north with a velocity
 of 40 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Tidal Feet current below surface	Temp. Deg. C water	Percent enter land	Number of Bacteria per cc.
		Approximate	Exact				
36P	9.41	3/4 way across Hudson River from Pier A	Lat 40 42 21 Long 74 01 49	1	Ebb		9,800
36S	9.42	3/4 way across Hudson River from Pier A	Lat 40 42 21 Long 74 01 48	20	"		8,800
364	9.43	3/4 way across Hudson River from Pier A	Lat 40 42 21 Long 74 01 48	80	"		7,800
368	9.45	3/4 way across Hudson River from Pier A	Lat 40 42 21 Long 74 01 48	60	"		4,800
366	9.50	50 feet from C.R.R. of N.J. Pier 5 Jersey City	Lat 40 42 22 Long 74 02 01	3	"		13,000
367	9.52	50 feet from C.R.R. of N.J. Pier 5 Jersey City	Lat 40 42 22 Long 74 02 01	20	"		11,800
368	9.54	50 feet from C.R.R. of N.J. Pier 5 Jersey City	Lat 40 42 22 Long 74 02 01	80	"		7,800

Ex. 96. P. 31.

Number of Bacteria in the Water Hudson River May 12, 1908
High water at Governors Island at 1.21 P. M. The wind was southeast with a velocity of
8 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Exact	Feet below current	Tidal current	Temp. water	Percent Def.G water	Number of Bacteria per cc.
		Approximate							
369	3.15	50 feet off Pier A Hudson River	Lat 40 42 14	1	Flood				9,600
			Long 74 01 08						
370	3.16	80 feet off Pier A Hudson River	Lat 40 42 16	10	"				7,900
			Long 74 01 08						
371	3.17	80 feet off Pier A Hudson River	Lat 40 42 16	20	"				6,800
			Long 74 01 08						
372	3.18	80 feet off Pier A Hudson River	Lat 40 42 16	40	"				8,200
			Long 74 01 08						
373	3.23	1/2 way across Hudson River from Pier A	Lat 40 42 17	1	"				7,600
			Long 74 01 20						
374	3.24	1/2 way across Hudson River from Pier A	Lat 40 42 17	10	"				7,100
			Long 74 01 20						
375	3.26	1/2 way across Hudson River from Pier A	Lat 40 42 17	20	"				8,400
			Long 74 01 20						
376	3.27	1/2 way across Hudson River from Pier A	Lat 40 42 17	40	"				8,800
			Long 74 01 20						
377	3.31	1/2 way across Hudson River	Lat 40 42 19	1	"				6,400
			Long 74 01 34						
378	3.32	1/2 way across Hudson River	Lat 40 42 19	10	"				6,200
			Long 74 01 34						
379	3.35	1/2 way across Hudson River	Lat 40 42 19	20	"				4,900
			Long 74 01 34						
380	3.36	1/2 way across Hudson River	Lat 40 42 19	40	"				3,800
			Long 74 01 34						
381	3.39	1/2 way across Hudson River from Pier A	Lat 40 42 21	1	"				8,800
			Long 74 01 48						

Number of bacteria in the water Hudson River May 15, 1909.
High water at Governors Island at 1.41 p. m. The wind was southwest with a velocity of
5 miles per hour.

Sample No.	Hour p. m.	In millions of Bacteria		Feet below surface	Tidal current	Temp. Fahrenheit	Percent solid matter	Number of bacteria per cc.
		Approximate	Exact					
358	3.40	1 way across Hudson River from Pier A	Lat 40 42 21 Long 74 01 49	10	Flood			5,300
359	3.41	1 way across Hudson River from Pier A	Lat 40 42 21 Long 74 01 49	20	"			4,700
364	3.45	1 way across Hudson River from Pier A	Lat 40 42 21 Long 74 01 49	40	"			3,800
368	3.47	20 feet from C.B.S. of N.J. Pier 5 Jersey City	Lat 40 42 21 Long 74 02 01	1	"			7,000
366	3.48	20 feet from C.B.S. of N.J. Pier 5 Jersey City	Lat 40 42 21 Long 74 02 01	50	"			5,800
367	3.50	20 feet from C.B.S. of N.J. Pier 5 Jersey City	Lat 40 42 21 Long 74 02 01	60	"			4,700

En. 15, 2, 22.

Number of bacteria in the water, Upper Bay, Lower Bay and Atlantic Ocean, May 18, 1909.

High water occurred at Governors Island at 2.40 p.m. The wind was south with a velocity of

8 miles per hour.

Sample No.	Hour a.m.	Location of samples		Fath. below surface	Tidal current	Temp. water	Percent water log. C water	No. of bacteria per C.C.
		Approximate	Depth					
388	9.00	At red spar buoy in Hudson River opposite Pier A	Lat 40 42 12 Long 74 01 19	1	ebb			10,000
389	9.01	At red spar buoy in Hudson River opposite Pier A	Lat 40 42 12 Long 74 01 19	10	ebb			14,000
390	9.02	At red spar buoy in Hudson River opposite Pier A	Lat 40 42 12 Long 74 01 19	20	ebb			11,000
391	9.04	At red spar buoy in Hudson River opposite Pier A	Lat 40 42 12 Long 74 01 19	40	ebb			9,800
392	9.00	Upper Bay, by spar buoy A off Red Hook, Brooklyn	Lat 40 40 43 Long 74 01 45	1	ebb			12,000
393	9.01	Upper Bay, by spar buoy A off Red Hook, Brooklyn	Lat 40 40 43 Long 74 01 45	10	ebb			10,000
394	9.02	Upper Bay, by spar buoy A off Red Hook, Brooklyn	Lat 40 40 43 Long 74 01 45	20	ebb			9,800
395	9.03	Upper Bay, by spar buoy A off Red Hook, Brooklyn	Lat 40 40 43 Long 74 01 45	30	ebb			6,400
396	9.46	Upper Bay, by bell buoy B 12 1/2	Lat 40 36 19 Long 74 03 14	1	ebb			9,800
397	9.47	Upper Bay, by bell buoy 12 1/2	Lat 40 36 19 Long 74 03 14	10	ebb			9,800
398	9.48	Upper Bay, by bell buoy 12 1/2	Lat 40 36 19 Long 74 03 14	20	ebb			6,000
399	9.49	Upper Bay, by bell buoy 12 1/2	Lat 40 36 19 Long 74 03 14	30	ebb			9,800
400	10.06	Narrows, midway between Fort Lafayette and Fort Mifflin	Lat 40 34 58 Long 74 02 48	1	ebb			9,000
401	10.09	Narrows, midway between Fort Lafayette and Fort Mifflin	Lat 40 34 58 Long 74 02 48	10	ebb			9,000

Number of Bacteria in the Water, Upper Bay, Lower Bay and Atlantic Ocean. (Continued.)

May 13, 1909.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. water	Percent land water	No. of Bacteria per C.C.
		Approximate	Exact "				
				Feet below surface	Deg. C		
402	10.10	Narrows, midway between Fort Lafayette and Fort Madsen	Lat 40 36 25 Long 74 02 48	20	Ebb		5,500
403	10.12	Narrows, midway between Fort Lafayette and Fort Madsen	Lat 40 36 25 Long 74 02 48	40	Ebb		5,000
404	10.25	Lower Bay, by bell buoy Craven Shoal	Lat 40 35 08 Long 74 02 32	1	Ebb		8,500
405	10.26	Lower Bay, by bell buoy Craven Shoal	Lat 40 35 08 Long 74 02 32	10	Ebb		6,800
406	10.27	Lower Bay, by bell buoy Craven Shoal	Lat 40 35 08 Long 74 02 32	20	Ebb		6,300
407	10.30	Lower Bay, by bell buoy Craven Shoal	Lat 40 35 08 Long 74 02 32	40	Ebb		3,200
408	10.50	Lower Bay, by bell buoy A.C. 24 in Ambrose Channel	Lat 40 33 30 Long 74 01 25	1	Ebb		6,400
409	10.51	Lower Bay, by bell buoy A.C. 24 in Ambrose Channel	Lat 40 33 30 Long 74 01 25	10	Ebb		5,300
410	10.53	Lower Bay, by bell buoy A.C. 24 in Ambrose Channel	Lat 40 33 30 Long 74 01 25	20	Ebb		1,800
411	10.55	Lower Bay, by bell buoy A.C. 24 in Ambrose Channel	Lat 40 33 30 Long 74 01 25	40	Ebb		600
412	11.10	Lower Bay, by bell buoy A.C. 18 in Ambrose Channel	Lat 40 32 00 Long 74 00 50	1	Flood		5,300
413	11.12	Lower Bay, by bell buoy A.C. 18 in Ambrose Channel	Lat 40 32 00 Long 74 00 50	10	Flood		3,100
414	11.14	Lower Bay, by bell buoy A.C. 18 in Ambrose Channel	Lat 40 32 00 Long 74 00 50	20	Flood		1,200
415	11.15	Lower Bay, by bell buoy A.C. 18 in Ambrose Channel	Lat 40 32 00 Long 74 00 50	40	Flood		640
416	11.35	Lower Bay, by bell buoy A.C. 12 in Ambrose Channel	Lat 40 31 05 Long 73 59 10	1	Flood		840

Ex. 95, p. 35.

Number of Bacteria in the Water, Upper Bay, Lower Bay and Atlantic Ocean. (Continued.)

May 13, 1909.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water Deg. C.	Percent land water per C.C.	No. of Bacteria per C.C.
		Approximate	Exact					
417	11.36	Lower Bay, by bell buoy A.C. 12 in Ambrose Channel	Lat 40 31 05 Long 73 59 10	10	Flood			260
418	11.38	Lower Bay, by bell buoy A.C. 12 in Ambrose Channel	Lat 40 31 05 Long 73 59 10	20	Flood			260
419	11.40	Lower Bay, by bell buoy A.C. 12 in Ambrose Channel	Lat 40 31 05 Long 73 59 10	40	Flood			160
420	12.30	Lower Bay, by gas buoy A.C.E. 2 outer end Ambrose Channel	Lat 40 29 50 Long 73 56 15	1	Flood			500
421	12.32	Lower Bay, by gas buoy A.C.E. 2 outer end Ambrose Channel	Lat 40 29 50 Long 73 56 15	10	Flood			460
422	12.34	Lower Bay, by gas buoy A.C.E. 2 outer end Ambrose Channel	Lat 40 29 50 Long 73 56 15	20	Flood			400
423	12.36	Lower Bay, by gas buoy A.C.E. 2 outer end Ambrose Channel	Lat 40 29 50 Long 73 56 15	40	Flood			220
424	1.10	Atlantic Ocean by whistling buoy	Lat 40 28 45 Long 73 53 35	1	Flood			600
425	1.12	Atlantic Ocean by whistling buoy	Lat 40 28 45 Long 73 53 35	10	Flood			200
426	1.14	Atlantic Ocean by whistling buoy	Lat 40 28 45 Long 73 53 35	20	Flood			340
427	1.16	Atlantic Ocean by whistling buoy	Lat 40 28 45 Long 73 53 35	40	Flood			110

Ex. 95. P. 36.

Number of Bacteria in the Water, Lower Bay. May 17, 1909.
 Low water occurred at Governors Island at 12.25 p.m. The wind southeast with a
 velocity of from 30 to 40 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Knots per hour	Feet below surface	Tidal current	Temp. Deg. C.	Percent water land Per C.C.	No. of Bacteria
		Approximate							
428	12.30	At gas buoy, S 2 near Coney Is. shore	Lat 40 34 02 Long 73 59 20	1	1	Ebb			4,600
429	12.32	At gas buoy S 2 near Coney Is. shore	Lat 40 34 02 Long 73 59 20	10	10	Ebb			3,600
430	12.35	At gas buoy S 2 near Coney Is. shore	Lat 40 34 02 Long 73 59 20	20	20	Ebb			1,900
431	1.04	About 1/2 mile from buoy S 2, on line	Lat 40 33 30 Long 73 59 05	1	1	Slack			3,800
432	1.07	About 1/2 mile from buoy S 2, on line	Lat 40 33 30 Long 73 59 05	10	10	Slack			2,900
433	1.10	About 1/2 mile from buoy S 2, on line	Lat 40 33 30 Long 73 59 05	16	16	Slack			2,800
434	1.21	About 1/2 mile from buoy S 2, on line	Lat 40 33 06 Long 73 58 46	1	1	Flood			3,200
435	1.23	About 1/2 mile from buoy S 2, on line	Lat 40 33 06 Long 73 58 46	10	10	Flood			2,600
436	1.25	About 1/2 mile from buoy S 2, on line	Lat 40 33 06 Long 73 58 46	20	20	Flood			1,600
437	2.00	About 1/2 mile farther on line	Lat 40 32 40 Long 73 58 45	1	1	Flood			2,200
438	2.02	About 1/2 mile farther on line	Lat 40 32 40 Long 73 58 45	10	10	Flood			1,600
439	2.05	About 1/2 mile farther on line	Lat 40 32 40 Long 73 58 46	16	16	Flood			1,200
440	2.31	About 1/2 mile farther on line	Lat 40 32 20 Long 73 58 20	1	1	Flood			2,400
441	2.35	About 1/2 mile farther on line	Lat 40 32 20 Long 73 58 20	10	10	Flood			1,700

Ex. 95. P. 37

Number of Bacteria in the Water, Lower Bay. (Continued.) May 17, 1909.

Sample No.	Hour P.M.	Location of Samples Approximate	Exact No.	Feet below surface	Tidal current	Temp. water Deg. C	Percent land water	No. of Bacteria per C.C.
442	2.36	About 1/2 mile farther on line	Lat 40 38 20 Long 73 58 20	20	Flood			1,800
443	3.11	About 1/2 mile farther on line	Lat 40 31 50 Long 73 58 18	1	Flood			2,100
444	3.13	About 1/2 mile farther on line	Lat 40 31 50 Long 73 58 18	10	Flood			1,800
445	3.15	About 1/2 mile farther on line	Lat 40 31 50 Long 73 58 18	20	Flood			1,000
446	3.36	About 1000 feet northwest of buoy A. C. 12, on line	Lat 40 29 50 Long 73 56 36	1	Flood			1,600
447	3.37	About 1500 feet northwest of buoy A. C. 12, on line	Lat 40 29 50 Long 73 56 36	10	Flood			1,800
448	3.40	About 1000 feet northwest of buoy A. C. 12, on line	Lat 40 29 50 Long 73 56 36	20	Flood			800
449	4.00	50 feet north of buoy A. C. 12	Lat 40 29 50 Long 73 56 36	1	Flood			1,400
450	4.02	50 feet north of buoy A. C. 12	Lat 40 29 50 Long 73 56 36	10	Flood			1,100
451	4.06	50 feet north of buoy A. C. 12	Lat 40 29 50 Long 73 56 36	14	Flood			900

Ex. 98. P. 36

Number of Bacteria in the Water, Lower Bay. May 16, 1904.

Low water occurred at Governors Island at 1.22 p.m. The wind was north until 1.29 p.m. with a velocity of from 8 to 10 miles per hour. From 1.49 p.m. the wind was southeast with a velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Current	Temp. water, Deg. C.	Percent land water	No. of Bacteria per C.C.
		Approximate	Exact					
462	10.00	100 feet south of buoy A. C. 12 in Ambrose Channel	Lat 40 29 48 Long 73 55 18	1	Ebb			790
463	10.02	100 feet south of buoy A. C. 12 in Ambrose Channel	Lat 40 29 48 Long 73 56 18	10	Ebb			640
464	10.06	100 feet south of buoy A. C. 12 in Ambrose Channel	Lat 40 29 48 Long 73 56 18	20	Ebb			420
458	10.07	100 feet south of buoy A. C. 12 in Ambrose Channel	Lat 40 29 48 Long 73 56 18	40	Ebb			350
456	10.10	Midway between buoy A. C. 12 and buoy N. B. 2	Lat 40 29 40 Long 73 57 18	1	Ebb			580
457	10.22	Midway between buoy A. C. 12 and buoy N. B. 2	Lat 40 29 40 Long 73 57 18	10	Ebb			480
468	10.24	Midway between buoy A. C. 12 and buoy N. B. 2	Lat 40 29 40 Long 73 57 18	20	Ebb			360
459	10.26	100 feet north of buoy N. B. 2 just outside Main Ship Channel	Lat 40 29 28 Long 73 58 30	1	Ebb			420
460	10.37	100 feet north of buoy N. B. 2 just outside Main Ship Channel	Lat 40 29 28 Long 73 58 30	10	Ebb			400
461	10.39	100 feet north of buoy N. B. 2 just outside Main Ship Channel	Lat 40 29 28 Long 73 58 30	20	Ebb			160
462	10.45	100 feet south of buoy N. B. 2 in Main Ship Channel	Lat 40 29 28 Long 73 58 30	1	Ebb			620
463	10.47	100 feet south of buoy N. B. 2 in Main Channel	Lat 40 29 28 Long 73 58 30	10	Ebb			820

Ex. 98, P. 29

Number of Bacteria in the Water, Lower Bay. (Continued.) May 10, 1909.

Sample No.	Hour a.m.	Approximate Location of Sample	Depth, fathoms		Fathoms below surface	Tidal Current	Temp. water	Percent land water	No. of Bacteria per C.C.
			ft.	m.					
464	10.49	100 feet south of buoy S. B. 2 in Main Ship Channel	Lat 40 39 50	Long 73 58 25	20	ebb			280
465	11.08	100 feet south of buoy S 1 1/2 in Main Ship Channel	Lat 40 39 08	Long 73 58 25	1	ebb			220
466	11.08	100 feet south of buoy S 1 1/2 in Main Ship Channel	Lat 40 39 08	Long 73 58 25	10	ebb			240
467	11.09	100 feet south of buoy S 1 1/2 in Main Ship Channel	Lat 40 39 08	Long 73 58 25	80	ebb			300
468	11.16	100 feet south of buoy S 4 in Main Ship Channel	Lat 40 39 00	Long 73 57 25	1	ebb			900
469	11.16	100 feet south of buoy S 4 in Main Ship Channel	Lat 40 39 00	Long 74 00 20	10	ebb			460
470	11.50	100 feet south of buoy S 4 in Main Ship Channel	Lat 40 39 00	Long 74 00 20	20	ebb			360
471	11.51	100 feet south of buoy S 6 in Main Ship Channel	Lat 40 38 25	Long 74 00 20	1	ebb			280
472	11.52	100 feet south of buoy S 6 in Main Ship Channel	Lat 40 38 25	Long 74 00 45	10	ebb			780
473	11.56	100 feet south of buoy S 6 in Main Ship Channel	Lat 40 38 55	Long 74 00 45	80	ebb			220
474	11.58	100 feet south of buoy S 8 in Main Ship Channel	Lat 40 38 45	Long 74 00 45	1	ebb			480
475	11.57	100 feet south of buoy S 8 in Main Ship Channel	Lat 40 38 47	Long 74 01 20	10	ebb			600
476	12.00	100 feet south of buoy S 8 in Main Ship Channel	Lat 40 38 45	Long 74 01 20	20	ebb			860
477	12.45	100 feet south of buoy S 10 in Main Ship Channel	Lat 40 38 30	Long 74 02 10	1	ebb			220
478	12.47	100 feet south of buoy S 10 in Main Ship Channel	Lat 40 38 30	Long 74 02 10	10	ebb			800
479	12.50	100 feet south of buoy S 10 in Main Ship Channel	Lat 40 38 30	Long 74 02 10	20	ebb			840

Number of Bacteria in the Water, Lower Bay. (Continued.) May 18, 1909.

Sample No.	Hour P.M.	Location of Samples	Approximate	Swab	Feet below surface	Tidal current	Temp. water land	Percent bacteria per C.O.
480	1.25	100 feet south of buoy B 12 in Main Ship Channel		Lat 40 28 30 Long 74 02 40	1	Black		1,100
481	1.27	100 feet south of buoy B 18 in Main Ship Channel		Lat 40 28 38 Long 74 02 40	10	Black		700
482	1.27	100 feet south of buoy B 22 in Main Ship Channel		Lat 40 28 35 Long 74 02 40	20	Black		280
483	1.49	100 feet west of buoy H.C. 2 in Main Ship Channel		Lat 40 29 08 Long 74 02 48	1	Flood		1,800
484	1.52	100 feet west of buoy H.C. 2 in Main Ship Channel		Lat 40 29 08 Long 74 02 48	10	Flood		1,000
485	1.55	100 feet west of buoy H.C. 2 in Main Ship Channel		Lat 40 29 08 Long 74 02 48	20	Flood		800
486	2.10	100 feet west of buoy H.C. 4 in Main Ship Channel		Lat 40 29 38 Long 74 02 40	1	Flood		940
487	2.12	100 feet west of buoy H.C. 4 in Main Ship Channel		Lat 40 29 38 Long 74 02 40	10	Flood		600
488	2.15	100 feet west of buoy H.C. 4 in Main Ship Channel		Lat 40 29 38 Long 74 02 40	20	Flood		580
489	2.35	100 feet west of buoy H.C. 6 in Main Ship Channel		Lat 40 30 08 Long 74 02 40	1	Flood		2,800
490	2.37	100 feet west of buoy H.C. 6 in Main Ship Channel		Lat 40 30 08 Long 74 02 40	10	Flood		1,800
491	2.40	100 feet west of buoy H.C. 6 in Main Ship Channel		Lat 40 30 08 Long 74 02 40	20	Flood		900
492	2.55	100 feet west of buoy H.C. 8 in Main Ship Channel		Lat 40 30 40 Long 74 02 35	1	Flood		1,800
493	2.57	100 feet west of buoy H.C. 8 in Main Ship Channel		Lat 40 30 40 Long 74 02 35	10	Flood		1,100
494	3.00	100 feet west of buoy H.C. 8 in Main Ship Channel		Lat 40 30 40 Long 74 02 35	20	Flood		700
495	3.10	100 feet west of buoy H. in Main Ship Channel		Lat 40 31 15 Long 74 02 30	1	Flood		1,400

Ex. 91, p. 47

336933

Number of Bacteria in the Water, Lower Bay. (Continued.) May 18, 1909.

Sample No	Hour p.m.	Location of Samples		Exact " "	Feet below surface	Tidal current	Temp. Deg. C	Percent water land	No. of Bacteria per C.C.
		Approximate							
496	3.12	100 feet west of buoy H in Main Ship Channel	Lat 40 31 15 Long 74 02 30		10	Flood			1,100
497	3.16	100 feet west of buoy H in Main Ship Channel	Lat 40 31 15 Long 74 02 30		20	Flood			800
498	3.25	100 feet east of buoy C 9 in Main Ship Channel	Lat 40 31 55 Long 74 02 25		1	Flood			2,100
499	3.27	100 feet east of buoy C 9 in Main Ship Channel	Lat 40 31 55 Long 74 02 25		10	Flood			1,800
500	3.30	100 feet east of buoy C 9 in Main Ship Channel	Lat 40 31 55 Long 74 02 25		20	Flood			950
501	3.40	100 feet east of buoy C 9 1/2 in Main Ship Channel	Lat 40 32 20 Long 74 01 35		1	Flood			2,000
502	3.42	100 feet east of buoy C 9 1/2 in Main Ship Channel	Lat 40 32 20 Long 74 01 35		10	Flood			1,600
503	3.45	100 feet east of buoy C 9 1/2 in Main Ship Channel	Lat 40 32 20 Long 74 01 35		20	Flood			700
504	3.55	100 feet east of buoy C 11 in Main Ship Channel	Lat 40 34 00 Long 74 02 30		1	Flood			3,600
505	3.57	100 feet east of buoy C 11 in Main Ship Channel	Lat 40 34 00 Long 74 02 30		10	Flood			1,900
506	4.00	100 feet east of buoy C 11 in Main Ship Channel	Lat 40 34 00 Long 74 02 30		20	Flood			1,500
507	4.10	100 feet east of bell buoy, Craven Shoal	Lat 40 35 10 Long 74 02 25		1	Flood			3,800
508	4.12	100 feet east of bell buoy, Craven Shoal	Lat 40 35 10 Long 74 02 25		10	Flood			3,200
509	4.15	100 feet east of bell buoy, Craven Shoal	Lat 40 35 10 Long 74 02 25		20	Flood			2,100

Ex. 95. P. 42

Number of Bacteria in the water Lower Bay May 19, 1909.
 Low water occurred at Governors Island at 3.14 p.m. The wind was southeasterly with a
 velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. Per- cent water Deg. C	No. of Bacteria Per C. C.
		Approximate	Exact			
510	9.30	500 feet west of bell buoy on Craven Shoal	Lat 40 35 10 Long 74 02 40	1	2bb	6,400
511	9.32	"	Lat 40 35 10 Long 74 02 40	10	"	4,600
512	9.35	"	Lat 40 35 10 Long 74 02 40	20	"	3,800
513	10.00	500 feet off South Beach Shore, Staten Island	Lat 40 36 00 Long 74 03 15	1	"	4,200
514	10.12	"	Lat 40 36 00 Long 74 03 15	10	"	3,600
515	10.32	Off south shore of Staten Island	Lat 40 34 05 Long 74 04 35	1	"	3,200
516	10.36	"	Lat 40 34 05 Long 74 04 35	10	"	2,100
517	10.56	"	Lat 40 33 10 Long 74 04 35	1	"	2,400
518	11.00	"	Lat 40 33 10 Long 74 04 35	10	"	2,000
519	11.22	"	Lat 40 32 40 Long 74 04 35	1	"	1,900
520	11.26	"	Lat 40 32 40 Long 74 04 35	10	"	1,200
521	11.42	"	Lat 40 32 00 Long 74 05 25	1	"	1,200
522	11.46	"	Lat 40 32 00 Long 74 05 25	10	"	1,000
523	P.m. 12.10	"	Lat 40 31 05 Long 74 05 45	1	"	1,400

Number of Bacteria in the Water. Lower Bay. May 19, 1909.
 Low water occurred at Governors Island at 3.14 p.m. The wind was southeast with a
 velocity of 10 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Feet below surface	Tidal Temp. Per- cent deg. C	No. of Bacteria per C.C.
		Approximate	Exact			
524	12.12	Off south shore of Staten Island	Lat 40 31 06 Long 74 05 45	10	Ebb	1,100
525	12.24	100 feet north of Old Orchard Shoal Light	Lat 40 30 45 Long 74 06 56	1	"	1,100
526	12.27	"	Lat 40 30 45 Long 74 06 56	10	"	700
527	1.16	100 feet north of northern cable buoy	Lat 40 30 05 Long 74 06 15	1	"	1,000
528	1.18	"	Lat 40 30 05 Long 74 06 15	10	"	800
529	1.20	"	Lat 40 30 05 Long 74 06 15	20	"	640
530	1.40	100 feet north of southern cable buoy	Lat 40 29 25 Long 74 06 35	1	"	1,200
531	1.42	"	Lat 40 29 25 Long 74 06 35	10	"	900
532	1.45	"	Lat 40 29 25 Long 74 06 35	20	"	840
533	1.57	200 feet south of buoy 51W, by wreck	Lat 40 28 35 Long 74 06 45	1	"	950
534	1.59	"	Lat 40 28 35 Long 74 06 45	10	"	800
535	2.01	"	Lat 40 28 35 Long 74 06 45	20	"	680
536	2.10	Midway between buoy 51W and Point Comfort Beacon	Lat 40 27 55 Long 74 07 00	1	"	980
537	2.12	"	Lat 40 27 55 Long 74 07 00	7	"	740

Ex. 95. P. 44.

Number of Bacteria in the Water. Lower Bay. May 19, 1909.
 Low water occurred at Governors Island at 2.14 p.m. The wind was southeast with a
 velocity of 10 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Exact Time	Fathoms below surface	Fidal Temp. Per- cent Water	No. of Bacteria
		Approximate					
538	3.06	500 feet south of spar buoy 14.	Lat 40 30 10	1	Flood		1,100
		off Sagune Point	Long 74 10 06				
539	3.07	"	Lat 40 30 10	10	"		900
		"	Long 74 10 06				
540	3.10	"	Lat 40 30 10	16	"		760
		"	Long 74 10 06				
541	3.16	500 feet south of spar buoy 14.	Lat 40 30 55	1	"		980
		off Sagune Point	Long 74 09 40				
542	3.17	"	Lat 40 30 55	10	"		640
		"	Long 74 09 40				
543	3.20	"	Lat 40 29 56	20	"		720
		"	Long 74 09 40				

Ex. 95. P. 45.

Number of Boats in the Water. East River. May 26, 1903.
High water occurred at Governors Island at 1.01 p.m. The wind was southwest with a velocity of 8 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Approximate		Exact	Feet below surface	Final Temp. surface water cent Deg. C	Per cent lead Boats	No. of Boats
844	10.08	80 feet off dock, Lawrence Point,			Lat 40 47 55	1	58.8		2,000
845	10.09	L.I. "			Long 73 54 31		"		1,600
846	10.10	1/4 way across East River from Lawrence Point			Lat 40 47 20	10	"		1,800
847	10.11	"			Long 73 54 31	1	"		1,800
848	10.12	"			Lat 40 47 30	10	"		1,800
849	10.13	1/2 way across East River			Long 73 54 30	1	"		2,100
850	10.14	"			Lat 40 47 37	1	"		1,800
851	10.15	"			Long 73 54 29	10	"		1,800
852	10.16	"			Lat 40 47 37	20	"		2,000
853	10.17	1/4 way across East River from Lawrence Point			Long 73 54 29	1	"		2,000
854	10.18	"			Lat 40 47 44	10	"		2,000
855	10.19	"			Long 73 54 40	20	"		2,000
856	10.20	80 feet off dock at Stony Point Bronx			Lat 40 47 44	20	"		2,000
857	10.21	"			Long 73 54 40	1	"		2,000
858	10.22	"			Lat 40 47 40	10	"		2,000
859	10.23	"			Long 73 54 41	20	"		2,000
860	10.24	"			Lat 40 47 40	20	"		2,000
861	10.25	"			Long 73 54 41	20	"		2,000
862	10.26	"			Lat 40 47 40	20	"		2,000
863	10.27	"			Long 73 54 41	20	"		2,000
864	10.28	"			Lat 40 47 40	20	"		2,000
865	10.29	"			Long 73 54 41	20	"		2,000
866	10.30	"			Lat 40 47 40	20	"		2,000
867	10.31	"			Long 73 54 41	20	"		2,000

En. 95. P. 46

May 26, 1909.

East River.

Number of Bacteria in the Water.

High water occurred at Governors Island at 1.41 p.m. The wind was southeast with a velocity of 8 miles per hour.

Sample No.	Hour p.m.	Position of Samples		Feet below surface	Tidal Temp. Per- cent sup- er- cent below	No. of Bacteria per C.C.
		Approximate	Exact			
587	3.16	80 feet off dock at Lawrence Point, L.I.	Lat 42 47 28 Long 73 54 31	1	Flood	9,400
588	3.17	"	Lat 42 47 28 Long 73 54 31	10	"	4,800
589	3.20	1/4 way across East River from Lawrence Point	Lat 42 47 30 Long 73 54 38	1	"	6,000
590	3.22	"	Lat 42 47 30 Long 73 54 38	10	"	4,200
591	3.26	1/2 way across East River	Lat 42 47 37 Long 73 54 39	1	"	6,000
592	3.28	"	Lat 42 47 37 Long 73 54 39	10	"	4,800
593	3.30	"	Lat 42 47 37 Long 73 54 39	20	"	3,800
594	3.28	3/4 way across East River from Lawrence Point	Lat 42 47 44 Long 73 54 40	1	"	9,000
595	3.37	"	Lat 42 47 44 Long 73 54 40	10	"	6,200
596	3.39	"	Lat 42 47 44 Long 73 54 40	20	"	6,300
597	3.44	20 feet off dock at Stamp Point	Lat 42 47 50 Long 73 54 41	1	"	6,400
598	3.46	"	Lat 42 47 50 Long 73 54 41	10	"	7,800
599	3.49	"	Lat 42 47 50 Long 73 54 41	20	"	6,200

Mar. 20, P. 47.

Number of Bacteria in the water. Harlem River. May 26, 1909.
High water occurred at Governors Island at 1.21 p.m. The wind was southwest with a
velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Exact " surface	Feet below	Tidal Temp. Per- cent deg. C	No. of Bacteria per C.C.
		Approximate					
570	11.20	20 feet off dock 118 St.		Lat 40 47 43	1	Flood	15,000
		Harlem River		Long 73 55 48			
571	11.22	"		Lat 40 47 43	10	"	13,500
		"		Long 73 55 48			
572	11.24	"		Lat 40 47 43	20	"	11,000
		"		Long 73 55 48			
573	11.30	Midstream, Harlem River		Lat 40 47 41	1	"	14,000
		"		Long 73 55 44			
574	11.32	"		Lat 40 47 41	10	"	12,000
		"		Long 73 55 44			
575	11.34	"		Lat 40 47 41	20	"	10,500
		"		Long 73 55 44			
576	11.40	20 feet off dock on Randall Island, Harlem River		Lat 40 47 40	1	"	19,000
		"		Long 73 55 40			
577	11.42	"		Lat 40 47 40	10	"	13,000
		"		Long 73 55 40			
578	4.08	20 feet off dock foot 118 St.		Lat 40 47 43	1	Ebb	9,000
		Harlem River		Long 73 55 48			
579	4.07	"		Lat 40 47 43	10	"	8,400
		"		Long 73 55 48			
580	4.10	"		Lat 40 47 43	20	"	6,800
		"		Long 73 55 48			
581	4.12	Midstream, Harlem River		Lat 40 47 41	1	"	8,600
		"		Long 73 55 44			
582	4.14	"		Lat 40 47 41	10	"	7,900
		"		Long 73 55 44			
583	4.15	"		Lat 40 47 41	20	"	5,300
		"		Long 73 55 44			
584	4.18	20 feet off dock on Randall Island, Harlem River		Lat 40 47 40	1	"	8,200
		"		Long 73 55 40			

Ex. 95. P. 48

Number of Bacteria in the Water. Harlem River. May 26. 1909.

High water occurred at Governors Island at 1.21 p.m. The wind was southwest with a velocity of 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Fathoms below surface	Tidal Temp. Per- cent water deg. C	No. of land Bacteria per C.C.
		Approximate	Exact			
595	4.00	20 feet off dock on Randall Island, Harlem River	Lat 40 47 40 Long 73 55 40	10	26b	7,400

Ex. 95. P. 49.

Number of Bacteria in the Water. Cross-section Rockaway Inlet. June 29, 1909.

July 1, 1909.

High water occurred at Governors Island at 6.11 p.m. on June 29, 1909. Low water occurred at Governors Island at 12.35 p.m. on July 1, 1909. The wind was northwest with a velocity of 5 miles per hour on June 29th. On July 1, the wind was southwest with a velocity of 10 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Tidal Current	Temp. water	Percent land water	No. of Bacteria per c.c.
		Approximate	Exact				
			0		Deg. C		
June 29							
586	12.50	50 feet off dock at Rockaway Pt.	Lat 40 34 06 Long 73 53 50	Ebb	20.6	16	2,600
587	1.20	1/2 way across Rockaway Inlet	Lat 40 34 16 Long 73 53 56	Ebb	20.6	16	2,800
588	1.40	West side of Rockaway Inlet.	Lat 40 34 20 Long 73 54 06	Ebb	20.6	16	3,200
589	2.45	50 feet off dock at Rockaway Pt.	Lat 40 34 06 Long 73 53 50	Flood	19.0	8	1,400
590	3.05	1/2 way across Rockaway Inlet	Lat 40 34 16 Long 73 53 56	Flood	19.0	8	1,100
591	3.25	West side of Rockaway Inlet. by gas buoy 2	Lat 40 34 20 Long 73 54 06	Flood	19.0	8	1,200

Ex. 95. P. 50.

Number of Bacteria in the Water. Beach Channel, Jamaica Bay. June 29, 1909.

High water occurred at Governors Island at 8.11 p.m. The wind was northeast with a velocity of 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Exact	Feet below surface	Tidal current	Temp. water Deg.C	Percent land water	No. of bacteria per C.C.
		Approximate		o					
592	2.15	100 feet off Belle Harbor dock	Lat 40 34 55	1		Flood	21.5	16	1,800
		Beach Channel	Long 73 51 05						
593	3.05	100 feet off dock at Seaside	Lat 40 36 10	1		Flood	22.5	20	2,700
		Rockway Beach	Long 73 49 35						
594	3.35	100 feet above Arverbridge, Rock- away Beach, Hammels Station	Lat 40 38 45	1		Flood	23.0	20	3,600
			Long 73 48 50						
595	5.00	30 feet off dock at clubhouse Baywater Ave.	Lat 40 36 30	1		Flood	23.0	24	3,800
			Long 73 46 15						
596	8.50	At bridge head of bat at Edgewater	Lat 40 36 00	1		Flood	27.0	29	4,400
			Long 73 46 10						

Kx. 95. P. 51.

Number of Bacteria in the Water. Jamaica Bay. June 30, 1909.
Low water occurred at Governors Island at 11.55 a.m. The wind was northwest with a velocity of 6 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Depth, feet below surface	Tidal current	Temp. water, Deg. C.	Percent land water	No. of Bacteria per C.C.
		Approximate	Exact					
597	7.30	At bridge Horton's Creek, Eggenere	Lat 40 36 00 Long 73 46 10	2	Ebb	27.0	28	5,200
598	7.40	30 feet off foot of Baywater Ave.	Lat 40 36 15 Long 73 46 10	1	Ebb	25.0	28	4,800
599	8.30	Far Rockaway	Lat 40 36 40 Long 73 47 20	1	Ebb	27.0	28	240,000
600	9.40	100 feet off shore in creek near Avenue Station	Lat 40 36 06 Long 73 47 20	1	Ebb	25.0	28	12,000
601	10.20	1000 feet off shore in same creek	Lat 40 36 50 Long 73 48 25	1	Ebb	25.0	28	8,000
602	1.10	Gross Channel near Avenue	Lat 40 36 48 Long 73 48 15	1	Slack	26.0	28	280,000
603	1.40	100 feet off foot Bennister Ave., Avenue	Lat 40 36 36 Long 73 48 28	1	Flood	27.0	28	22,000
604	2.20	In creek near foot of Pleasant St., Avenue	Lat 40 36 20 Long 73 48 20	1	Flood	27.0	28	30,000
605	3.05	In creek foot of Park Ave., Avenue	Lat 40 36 36 Long 73 48 10	1	Flood	27.0	28	11,000

Ex. 95. P. 60.

July 3, 1899.

Survey of Bacteria in the Water, Jamaica Bay.

Low water occurred at Governors Island at 10.25 p.m. The wind was southwest with a velocity of 8 miles per hour.

Sample No.	Hour a.m.	Location of Sample	Approximate	Tidal		Temp. water	Percent Bacteria per C.C.
				current	below		
606	8.25	At mouth Fresh Creek		Lat 40 39 30	1	80b	19,000
				Long 73 52 18			
607	9.10	1/8 way up Fresh Creek		Lat 40 39 50	1	80b	12,000
				Long 73 53 50			
608	9.50	Fresh Creek, just below R. R. crossing		Lat 40 39 18	1	80b	16,000
				Long 73 53 48			
609	10.45	At head of Second Creek		Lat 40 39 05	1	80b	1,000,000
				Long 73 53 00			
610	11.05	At mouth of Second Creek		Lat 40 39 16	1	80b	800,000
				Long 73 52 40			
611	11.35	Jamaica Bay, 500 feet off mouth Second Creek		Lat 40 39 36	1	80b	180,000
				Long 73 52 16			
612	12.00	Jamaica Bay, 500 feet off mouth of Fresh Creek		Lat 40 39 16	1	80b	180,000
				Long 73 52 30			
613	12.30	Jamaica Bay, 500 feet off Sand Bay shore		Lat 40 37 50	1	80b	22,000
				Long 73 53 04			
614	1.20	Creek at Camarillo		Lat 40 38 18	1	Flashed	19,000
				Long 73 54 00			
615	1.45	Jamaica Bay, 100 feet off landing Camarillo		Lat 40 37 40	1	Flashed	16,000
				Long 73 53 16			
616	2.00	Jamaica Bay, 200 feet off bath pool Bergen Beach		Lat 40 37 50	1	Flashed	6,000
				Long 73 53 48			

See pp. 2, 83.

Number of Bacteria in the Water, Hudson River, July 7, 1909.
 High water occurred at Syracuse Island at 11.16 a.m. The wind was east with a velocity
 of 8 miles per hour.

Sample No.	Hour a.m.	Location of Sample		Feet below surface	Tidal current	Temp. Deg. C	No. of bacteria per c.c.
		Approximate	Exact				
617	11.40	100 feet off shore	St. Vincent	Lat 40 54 40 Long 73 54 41	3	Flood	20 1/8 64 6,800
618	12.00	100 feet off shore	St. Vincent	Lat 40 54 40 Long 73 54 41	6	Flood	20 1/8 64 6,000
619	12.00	200 feet off shore	Indian Station	Lat 40 55 58 Long 73 54 30	1	Flood	20 1/8 64 6,200
620	12.30	200 feet off shore	Indian Station	Lat 40 55 58 Long 73 54 30	20	Flood	20 1/2 64 6,800
621	12.40	200 feet off shore	Federal Sugar Refining Co., Tonawara	Lat 40 55 58 Long 73 54 30	1	Flood	20 1/2 64 6,800
622	1.00	200 feet off shore	Federal Sugar Refining Co., Tonawara	Lat 40 55 58 Long 73 54 30	30	Flood	20 1/2 64 10,000
623	1.30	200 feet off shore	Recreation Pier, Tonawara	Lat 40 55 58 Long 73 54 30	1	Flood	21 64 80,000
624	1.30	200 feet off shore	Recreation Pier, Tonawara	Lat 40 55 58 Long 73 54 30	20	Flood	21 64 10,000
625	3.30	100 feet off shore	St. Vincent	Lat 40 54 40 Long 73 54 41	1	Ebb	21 64 12,000
626	3.30	100 feet off shore	St. Vincent	Lat 40 54 40 Long 73 54 41	6	Ebb	21 64 10,000
627	3.30	200 feet off shore	diverside	Lat 40 54 40 Long 73 54 41	1	Ebb	21 64 10,000
628	4.00	200 feet off shore	diverside	Lat 40 54 40 Long 73 54 41	30	Ebb	21 64 9,800
629	4.20	200 feet off shore	diverside	Lat 40 54 40 Long 73 54 41	1	Ebb	21 64 10,000

St. Vincent, N. Y.

Number of Bacteria in the Water. Hudson River. July 7, 1909. (Continued.)

Sample No.	Hour p.m.	Location of Samples		Exact " O	Feet below surface	Tidal current	Temp. water land Deg.-C	Percent water per C.C.	No. of Bacteria per C.C.
		Approximate							
630	4.30	200 feet off drawbridge	Spuyten	Lat 40 52 50 Long 73 55 25	20	Ebb	21 68		8,500
631	4.50	Duyvil Creek		Lat 40 52 20 Long 73 56 50	1	Ebb	21 68		9,000
632	5.00	Station	Inwood	Lat 40 52 20 Long 73 55 50	10	Ebb	21 68		9,500
		Station	Inwood						

Ex. 95. P. 55.

Number of Bacteria in the Water. Gravesend Bay, Coney Island Creek. July 9, 1909.
 High water occurred at Governors Island at 1.01 p.m. The wind was southeast with a velocity
 of 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Knot " "	Feet below surface	Tidal current	Temp. Deg.C	Percent water per C.C.	No. of Bacteria per C.C.
		Approximate							
633	12.30	Gravesend Bay, 200 feet off Marine Basin	Lat 40 36 10 Long 74 00 50	1		Flood	20 1/2	12	3,600
634	1.00	Gravesend Bay, 200 feet off Atlantic Yacht Club	Lat 40 36 36 Long 74 00 00	1		Flood	20 1/2	12	3,800
635	1.30	Coney Island Creek, at mouth	Lat 40 34 45 Long 73 59 20	1		Flood	20 1/2	12	20,000
636	2.15	Coney Island Creek, foot 12 St.	Lat 40 34 55 Long 73 58 55	1		Ebb	21	12	8,500
637	3.10	Coney Island Creek, foot 17 St.	Lat 40 34 55 Long 73 59 05	1		Ebb	21	12	9,000
638	3.40	Gravesend Bay, foot 22 St.	Lat 40 34 50 Long 73 59 35	1		Ebb	22	12	240,000
639	4.30	Gravesend Bay, foot 24 St.	Lat 40 34 45 Long 73 59 40	1		Ebb	21 1/2	12	130,000
640	5.00	Gravesend Bay, 200 feet off Atlantic Yacht Club	Lat 40 35 35 Long 74 00 00	1		Ebb	20 1/2	12	8,000

2x. 9E. P. 56.

Number of Bacteria in the Water. Gravesend Bay. July 10, 1909.
 High water occurred at Governors Island at 2.09 p.m. The wind was southeast with a velocity
 of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Knot " "	Feet below surface	Tidal current	Temp. water Deg.C	Percent land water	No. of Bacteria per C.C.
		Approximate							
641	9.45	End of dock Ulmer Park	Lat 40 35 25 Long 73 59 50	1		Flood	19	12	6,000
642	10.15	End of dock Bay Yacht Club	Lat 40 36 10 Long 74 00 55	1		Flood	19	12	4,500
643	10.40	Bath Beach 500 feet off Avon Beach Hotel	Lat 40 36 00 Long 74 00 20	1		Flood	19	12	3,900
644	11.10	100 feet off dock Port Lowry Hotel	Lat 40 35 50 Long 74 00 10	1		Flood	19	12	3,500
645	11.50	Outer end of Marine Basin	Lat 40 36 10 Long 74 01 05	1		Flood	19	12	3,200
646	12.20	By breakwater north of Coney Island Creek	Lat 40 35 00 Long 73 59 30	1		Flood	19	12	5,900
647	1.05	Foot 22 St. Coney Island	Lat 40 34 50 Long 73 59 35	1		Flood	19	12	140,000

Ex. 95. P. 57.

Number of Bacteria in the Water. Sandy Hook Bay, Shrewsbury River, Lower New York Bay.

July 13, 1909.

High water occurred at Governors Island at 6.09 p.m. The wind was southeast with a velocity

of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water	Percent land water	No. of Bacteria per C.C.
		Approximate	Exact					
648	11.40	Sandy Hook Bay, near Shrewsbury	Lat 40 27 20 Long 74 01 28	1	Flood	20	1/2	800
649	12.20	Shrewsbury River at Spermaceti Cove	Lat 40 24 56 Long 73 59 36	1	Flood	22	28	1,100
650	1.15	Shrewsbury River at Highland Landing	Lat 40 23 50 Long 73 58 46	1	Flood	23	28	2,400
651	2.05	Neversink River near mouth	Lat 40 22 50 Long 73 59 16	1	Flood	23	28	1,600
652	3.00	Shrewsbury River at Leebright	Lat 40 21 56 Long 73 58 40	1	Flood	25	32	2,800
653	3.45	200 feet off shore Sandy Hook Bay	Lat 40 26 46 Long 73 59 50	1	Flood	20	1/2	720
654	4.10	Off west point of Sandy Hook	Lat 40 26 36 Long 74 01 28	1	Flood	20	1/2	840
655	4.20	Off west point of Sandy Hook	Lat 40 26 36 Long 74 01 28	1	Flood	20	20	600

Ex. 95. P. 78.

Number of Bacteria in the Water. Lower Bay. July 13, 1909.
 High water occurred at Governors Island at 8.09 p.m. The wind was southeast with a velocity
 of 5 miles per hour.

Sample No.	Hour	Location of Samples		Feet below surface	Tidal current	Temp. water land Deg.-C water	Percent No. of Bacteria per C.C.
		Approximate	Exact				
656	4.35	Lower Bay, Main Ship Channel	Lat 40 28 45 Long 74 01 25	1	Flood	20 1/2	16
657	4.40	Lower Bay, Main Ship Channel	Lat 40 28 45 Long 74 01 25	40	Flood	20	16
658	5.00	Lower Bay, Main Ship Channel	Lat 40 29 50 Long 74 01 00	1	Flood	20 1/2	16
659	5.10	Lower Bay, Main Ship Channel	Lat 40 29 50 Long 74 01 00	40	Flood	20	16
							540

Ex. 98. P. 89.

Number of Bacteria in the Water. Lower Bay. July 14, 1909.

Low water occurred at Governors Island at 11.50 a.m.

Sample No.	Hour a.m.	Location of Sample		Feet below surface	Tidal current	Temp. water Deg. C	Percent land water	No. of bacteria per C.C.
		Approximate	Exact					
660	9.15	Near bell buoy off Gas Gate Inn	Lat 40 34 15 Long 73 59 30	1	Ebb	19 1/2	16	5,400
661	9.55	" " " " " "	Lat 40 34 05 Long 73 59 30	1	Ebb	19 1/2	16	6,200
662	10.00	East Bank	Lat 40 33 15 Long 73 59 45	1	Ebb	19 1/2	16	9,800
663	10.30	800 feet from buoy A. C. 16 in 14 foot channel	Lat 40 31 30 Long 74 00 15	1	Ebb	19 1/2	16	9,200
664	11.00	Nearer Sheel south of Andrews channel	Lat 40 31 10 Long 74 00 35	1	Ebb	19 1/2	16	4,900
665	11.15	South Channel	Lat 40 30 45 Long 74 00 50	1	Ebb	19 1/2	16	4,800
666	11.25	" " " " " "	Lat 40 30 40 Long 74 00 50	30	Ebb	19	16	3,400
667	11.55	" " " " " "	Lat 40 31 00 Long 74 02 15	1	Ebb	19 1/2	16	4,400
668	12.05	" " " " " "	Lat 40 31 00 Long 74 02 15	30	Ebb	19	16	3,100
669	1.00	Main Ship Channel	Lat 40 31 00 Long 74 02 30	1	Flood	19 1/2	16	3,900
670	1.10	" " " " " "	Lat 40 31 00 Long 74 02 30	40	Flood	19	16	2,600
671	2.00	800 feet west of West Bank light	Lat 40 32 15 Long 74 02 45	1	Flood	19 1/2	16	4,600
672	2.50	Kidney between West Bank light and Elm Tree Beacon	Lat 40 33 05 Long 73 04 10	1	Flood	19 1/2	16	4,800
673	3.30	1000 feet off Elm Tree Beacon	Lat 40 33 45 Long 74 05 30	1	Flood	20	16	4,800

Ex. 95, P. 60.

July 15, 1908.

Surber of Bacteria in the Water. Harlem River.

Low water occurred at Governors Island at 12.46 p.m.

Sample No.	Hour P.M.	Location of Samples	Approximate	Feet below surface	Tidal Temp. Per-		No. of Bacteria per c.c.
					our- rent	water cent deg. C	
674	12.30	Midstream at E. 109 St.		Lat 40 49 25 Long 73 56 09	21	21	180,000
675	1.05	Midstream at 3 Av. bridge		Lat 40 48 26 Long 73 55 56	"	21	90,000
676	1.25	Midstream at 116 St.		Lat 40 48 40 Long 73 56 03	"	21	35,000
677	1.50	Midstream at 207 St.		Lat 40 48 44 Long 73 56 24	"	21	20,000
678	2.15	Midstream 200 feet east Spuyten Duyvil bridge		Lat 40 52 42 Long 73 56 26	"	21	12,000
679	3.30			Lat 40 52 42 Long 73 56 26	Flood	21	4,200
680	3.45	Midstream at 207 St. bridge		Lat 40 51 46 Long 73 56 24	"	21	14,000
681	4.10	Midstream at 116 St. bridge		Lat 40 49 40 Long 73 56 03	"	21 1/2	20,000
682	4.35	Midstream at 3 Av. bridge		Lat 40 48 26 Long 73 56 26	"	21 1/2	20,000
683	4.50	Midstream at E. 109 St.		Lat 40 47 23 Long 73 56 09	"	21	60,000

Ex. 98, p. 61.

Number of Bacteria in the Water. Upper Bay. July 16, 1909.
 Low water occurred at Governors Island at 1.26 p.m.

Sample No.	Hour a.m.	Location of Samples		Fath Below Surface	Tidal current	Temp. water land Deg.C	Percent No. of Bacteria per C.C.
		Approximate	Exact				
684	11.30	Midway between Battery and Governors Island	Lat 40 41 50 Long 74 01 00	1	Ebb	20 1/2 28	16,000
685	1.00	3/4 mile north Hobbin Reef near buoy G2	Lat 40 40 12 Long 74 03 10	1	Ebb	20 1/2 28	12,000

Ex. 98. P. 62.

Number of Bacteria in the Water. The Narrows. July 16, 1909.

Low water occurred at Governors Island at 1.26 p.m. The wind was southeast with a velocity of 10 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Tidal Temp. Per- cur- water cent rent def.C land water per C.C.	No. of Bacteria per C.C.
		Approximate	Exact O. " surface		
686	1.50	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	1 Ebb 20.6 28	9,500
687	4.10	" " "	Lat 40 36 25 Long 74 02 48	1 Flood 20 20	5,200

Ex. 95. P. 63

Number of Bacteria in the Water. Upper Bay. July 16, 1909.
Low water occurred at Governors Island at 1.25 P.M.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal current	Temp. water	Percent land water	No. of Bacteria per C.C.
		Approximate	Exact					
688	4.45	3/4 mile north Robbins Reef near buoy G E	Lat 40 40 12 Long 74 08 10	1	Flood	20	28	8,500
689	5.20	Midway between Battery and Governors Island	Lat 40 41 50 Long 74 01 00	1	Flood	20	28	11,000

Ex. 96. P. 64

Number of Bacteria in the Water. Kill Van Kull. July 17, 1909.
 Low water occurred at Governors Island at 8.19 p.m. The wind was east, with a
 velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Tidal cur- rent	Temp. Water deg.C	Per- cent land water	No. of Bacteria per C.C.
		Approximate	Exact S. N. E. surface				
690	9.30	Upper Bay, off Tompkinsville	Lat 40 38 20 Long 74 04 15	Ebb	21	28	8,000
691	10.10	Kill van Kull, west end	Lat 40 39 30 Long 74 08 40	"	21	28	5,800
692	10.35	Kill van Kull, off Port Richmond	Lat 40 38 35 Long 74 08 00	"	21	28	5,400
693	11.00	Sedine Creek, near mouth	Lat 40 38 20 Long 74 07 35	"	22	28	6,400

Ex. 95. P. 65

Number of Bacteria in the Water. Upper Bay. July 17, 1909.
Low water occurred at Governors Inland at 2.19 p.m. The wind was east with a velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples	Feet		Tidal Temp. Per- cent deg.C	land water	No. of Bacteria per C.C.	
			Exact	below surface				
694	11.25	At end of pier foot of 66th St Brooklyn	Lat 40 39 40	1	23b	21	28	120,000
			Long 74 01 55					
695	11.45	By buoy off Governors Bay	Lat 40 39 30	1	"	21	28	90,000
			Long 74 01 36					
696	12.00	Off Atlantic Docks	Lat 40 41 08	1	"	21	28	26,000
			Long 74 00 50					
697	P.M. 12.15	500 feet northeast of Ellis Island	Lat 40 41 55	1	"	21	28	22,000
			Long 74 02 15					

Ex. 26. P. 66

Number of Bacteria in the Water. Upper Bay, Narrows and Lower Bay. July 20, 1909.
High water occurred at Governors Island at 10.21 a.m.

Sample No.	Hour a.m.	Location of Samples		Exact 0° 1' surface	Tidal Temp. Far-ther-est deg. C		No. of Bacteria per c.c.
		Approximate	Feet below surface		Water	Land	
698	11.45	Upper bay just south of Governors Island	Lat 40 40 56 Long 74 01 28	1	80 1/2	80	22,000
699	12.25	Upper bay 600 feet east of Robbins Reef light	Lat 40 39 57 Long 74 03 49	1	"	80	18,000
700	12.45	Narrows, midway between forts	Lat 40 38 28 Long 74 02 48	1	"	80	16,000
701	2.30	Lower bay 800 feet off Fortona Point	Lat 40 34 26 Long 74 00 50	1	"	16	8,400

Ex. 98. P. 67

Number of Bacteria in the Water. Lower Bay. July 21, 1909.
High water occurred at Governors Island at 11.01 a.m.

Sample No.	Hour a.m.	Location of Sample		Exact "	Feet below surface	Flood current	Temp. water below 50	Percent land water	No. of Bacteria per C.C.
		Approximate							
T02	8.10	Lower Bay, 500 feet off Hartens Pt.	Lat 40 34 35	Long 74 00 50	1	Flood	19.0	12	2,200
T03	8.18	" " " "	Lat 40 34 35	Long 74 00 50	20	Flood	19.0	12	1,400
T04	9.28	Lower Bay, adjacent Channel buoy B	Lat 40 30 18	Long 73 59 40	1	Flood	19.0	0	480
T06	9.29	" " " "	Lat 40 30 18	Long 73 57 40	40	Flood	19.0	0	240

Ex. 96, P. 60.

Number of Bacteria in the Water. Atlantic Ocean. July 21, 1909.

High water occurred at Governors Island at 11.01 a.m. The wind was southeast with a velocity of 5 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Exact	Feet below surface	Tidal current deg.	Temp. water	Per cent land bacteria per C.C.
		Approximate						
706	12.15	10 miles east of Long Branch, in mud gorge	Lat 40 19 15 Long 73 48 45	0	1	Flood 19	0	280
707	12.20	"	Lat 40 19 15 Long 73 48 45	0	145	" 14	0	40
708	1.00	12 miles east of Long Branch in mud gorge	Lat 40 19 15 Long 73 47 15	0	1	" 19	0	180
709	1.20	"	Lat 40 19 15 Long 73 47 15	0	150	" 14	0	30
710	2.45	On "Oil Spot" off Sandy Hook	Lat 40 27 00 Long 73 58 25	0	1	Ebb 19	4	440
711	3.00	" " " "	Lat 40 27 05 Long 73 58 25	0	1	" 19	4	280
712	3.30	Off Sandy Hook, at bell buoy 5	Lat 40 28 45 Long 73 59 50	0	1	" 19	8	1,800
713	3.35	" " " "	Lat 40 26 45 Long 73 59 50	0	40	" 18	8	740

Ex. 95. P. 69.

Number of Bacteria in the Water. Lower Bay. July 21, 1909.
 High water occurred at Governors Island at 11.01 a.m.

Sample No.	Hour p.m.	Location of Samples		Exact	Feet below surface	Tidal current	Temp. water	Percent land water	No. of Bacteria per C.C.
		Approximate							
714	4.06	Lower Bay.	Ambrose Channel buoy 10	Lat 40 30 55 Long 73 58 50	1	Ebb	19.0	12	3,200
715	4.10	"	"	Lat 40 30 55 Long 73 58 50	40	Ebb	18.0	12	1,400

Ex. 95. P. 70.

Number of Bacteria in the Water. The Narrows. July 21, 1909
 High water occurred at Governors Island at 11.01 a.m. The wind was southeast with a
 velocity of 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Tidal Temp. Per- cur- rent deg.C	Per- cent land water	No. of Bacteria per C.C.
		Approximate	Exact below 0' surface			
716	4.45	Narrows, midway between forts	Lat 40 36 25 Long 74 02 48	Ebb	12	9,000
717	4.50	" "	Lat 40 36 25 Long 74 12 48	"	18	4,200

Ex. 98. P. 71.

Number of Bacteria in the Water. Upper Bay. July 21, 1909.
 High water occurred at Governors Island at 11.01 a.m. The wind was southeast with a
 velocity of 5 miles per hour.

Sample No. Hour	Location of Samples	Tidal Temp. Fer-		No. of Bacteria per C.C.
		cur-	water cent	
	Approximate	rent	deg.C land	
		deg.	water	
		o	°	
		°	°	
718 5 26	Upper Bay, 1000 feet off Erie	40	40	20
		Lat	40	20
		Long	74	01
			20	20
719 5.30	Basin	40	40	20
		Lat	40	20
		Long	74	01
			20	20

Ex. 96. P. 72.

Number of Bacteria in the Water, Hudson River, Upper Bay and Lower Bay, July 22, 1903.

High water occurred at Governors Island at 11.51 a.m. The wind was south with a velocity of 8 miles per hour.

Temp. No.	Hour a.m.	Location of Samples	Feet		Tidal Temp. Per- cent deg. C	No. of Bacteria per C.C.
			Exact	below surface		
720	10.20	Hudson River, midstream off Governors St.	Lat 40 44 36	1	Flood 20.5	36
721	10.25	"	Long 74 01 10		"	36
722	10.45	Hudson River, midstream off DeBroun St.	Lat 40 43 30	1	" 20.5	36
723	10.52	"	Long 74 01 15		"	36
724	11.20	Hudson River, midstream off Pier A.	Lat 40 43 30	40	"	36
725	11.25	"	Long 74 01 15		"	36
726	11.40	Upper Bay, 500 feet east of Liberty Island	Lat 40 41 20	1	" 20.5	32
727	11.48	"	Long 74 01 34		"	32
728	12.10	Upper Bay near bell-buoy 22	Lat 40 41 20	80	"	28
729	12.15	"	Long 74 02 28		"	28
730	12.25	Upper Bay near Robbins Reef bell-buoy	Lat 40 40 12	1	" 20	28
731	12.30	"	Long 74 03 10		"	28
732	12.50	Barrows, midway between forts	Lat 40 39 10	65	" 19.5	20
733	12.55	"	Long 74 03 50		"	16
734	1.15	Lower Bay, 500 feet off Hartons Point	Lat 40 36 25	1	"	16
			Long 74 02 49		"	16
			Lat 40 34 38		"	16
			Long 74 00 50		"	16

Ex. 25, P. 73

Number of Bacteria in the Water, Barrows, Upper Bay and Hudson River, July 22, 1909.

Low water occurred at Governors Island at 5.43 p.m. The wind was south with a velocity of 8 miles per hour.

Sample No.	Hour p.m.	Approximate Location of Samples	Exact " "	Fath below surface	Tidal Temp. per cent deg.-C water	No. of Bacteria per C.C.
735	3.05	Barrows, midway between forts	Lat 40 56 25	1	85.6	8,000
			Long 74 02 48			
736	3.10	" "	Lat 40 56 25	90	"	80
			Long 74 02 48			
737	3.30	Upper Bay, near Robbins Reef	Lat 40 59 10	1	"	80.6
			Long 74 03 50			10,000
738	3.37	" "	Lat 40 59 10	60	"	80
			Long 74 03 50			7,000
739	3.50	Upper Bay, near bell-buoy 38	Lat 40 42 15	1	"	86.8
			Long 74 03 10			12,000
740	3.55	" " " "	Lat 40 40 32	80	"	19.8
			Long 74 03 10			20
741	4.05	Upper Bay, 800 feet east of Liberty Island	Lat 40 41 20	1	"	80.6
			Long 74 02 25			16,000
742	4.10	" "	Lat 40 41 20	80	"	19.8
			Long 74 02 25			7,000
743	4.15	Hudson River, midstream off Pier A	Lat 40 42 19	1	"	80.6
			Long 74 01 34			14,000
744	4.21	" "	Lat 40 42 19	40	"	80
			Long 74 01 34			8,000
745	4.28	Hudson River, midstream off Westvaco St.	Lat 40 43 50	1	"	80.6
			Long 74 01 15			16,000
746	4.40	" "	Lat 40 43 30	40	"	80
			Long 74 01 15			7,000
747	4.50	Hudson River, midstream off Ganeyport St.	Lat 40 44 35	1	"	80.6
			Long 74 01 10			12,000
748	4.53	" "	Lat 40 44 35	60	"	19.8
			Long 74 01 10			20

Ex. 98 P. 94.

July 24, 1909.

East River.

Number of Bacteria in the Water.

High water occurred at Governors Island at 12.51 p.m. The wind was north with a velocity of 30 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal current	Temp. water deg. C	Percent land water	No. of bacteria per c.c.
		Approximate	Exact					
749	9.06	100 feet off east dock on Governors Island	Lat 40 41 38 Long 74 00 50	1	ebb	10.2	28	26,000
750	9.08	"	Lat 40 41 38 Long 74 00 50	40	"	19.8	28	14,000
751	9.18	200 feet off Pier 26, Brooklyn	Lat 40 40 40 Long 74 01 16	1	"	20.5	28	42,000
752	9.18	"	Lat 40 40 40 Long 74 01 16	40	"	19.5	28	22,000
753	9.28	500 feet off Erie Basin, in Upper Bay	Lat 40 40 20 Long 74 01 16	1	"	20.2	28	21,000
754	9.30	"	Lat 40 40 20 Long 74 01 16	30	"	19.6	29	11,000
755	10.00	100 feet off Pier 10, Brooklyn	Lat 40 41 56 Long 74 00 50	1	"	10.8	29	22,000
756	10.06	"	Lat 40 41 56 Long 74 00 50	40	"	19.6	28	14,000
757	10.26	Foot of Oliver St. Manhattan	Lat 40 42 30 Long 73 39 50	1	"	21.5	28	124,000
758	10.30	" pier head line	Lat 40 42 30 Long 73 39 50	20	"	20.0	28	48,000
759	10.56	Foot of Corlears St. Manhattan	Lat 40 42 38 Long 73 39 48	1	"	20.8	28	11,000
760	11.00	" tan	Lat 40 42 38 Long 73 39 48	20	"	20.0	28	6,800

Ex. 98 P. 76.

Number of Bacteria in the Water. Hudson River. July 26, 1909.
 High water occurred at Governors Island at 2.58 p.m. Ebb current ran down the river
 practically all day. The wind was north with a velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surf- face	Tidal rent deg.C	Percent land water	No. of bacteria per c.c.
		Approximate	Exact				
761	11.00	500 feet off Pier 4, Manhat	Lat 40 42 25 Long 74 01 10	1	Ebb	20.0	36
762	11.05	"	Lat 40 42 25 Long 74 01 10	40	"	19.0	36
763	11.20	500 feet off foot West 23 St.	Lat 40 45 09 Long 74 00 45	1	"	20.0	52
764	11.25	"	Lat 40 45 09 Long 74 00 45	40	"	19.0	52
765	11.40	500 feet off foot West 59 St.	Lat 40 46 25 Long 73 59 45	1	"	20.0	52
766	11.43	"	Lat 40 46 25 Long 73 59 45	40	"	19.0	52
767	12.00	500 feet off foot West 96 St.	Lat 40 47 50 Long 73 58 40	1	Slack	20.0	52
768	12.05	"	Lat 40 47 50 Long 73 58 40	40	"	19.0	52
769	12.25	500 feet off foot of West	Lat 40 48 20 Long 73 58 25	1	"	20.5	64
770	12.30	"	Lat 40 48 20 Long 73 58 25	20	"	19.5	64
771	3.00	At foot of west 156 St.	Lat 40 50 00 Long 73 57 05	1	Ebb	21.0	64
772	3.15	Washington Heights Bath	Lat 40 49 45 Long 73 57 15	1	"	21.0	64
773	3.25	At foot of West 136 St.	Lat 40 49 20 Long 73 57 20	1	"	21.0	64

Ex. 95 P. 76.

Number of Bacteria in the Water. Hudson River. August 19, 1909.
 High water occurred at Governors Island at 10.42 a.m. The wind was north with a
 velocity of 5 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Exact " "	Tidal current	Temp. water deg. C	Percent land water	No. of bacteria per c.c.
		Approximate				rent			
774	9.15	Midstream opposite Pier 1.	Lat 40 42 25	1	Flood	21.5	20		12,000
		Manhattan	Long 74 01 35						
775	9.20	"	Lat 40 42 25	50		20.5	20		5,000
			Long 74 01 35						
776	9.40	1000 feet off Pier 17, Man-	Lat 40 43 05	1		21.5	20		15,000
		hattan	Long 74 01 25						
777	9.45	"	Lat 40 43 05	20		21.0	28		10,000
			Long 74 01 25						
778	9.50	"	Lat 40 43 05	40		20.5	28		2,500
			Long 74 01 25						
779	11.00	Midstream, opposite Pier 32	Lat 40 43 40	1		21.5	28		24,000
		Manhattan	Long 74 01 15						
780	11.05	"	Lat 40 43 40	40		21.0	28		8,000
			Long 74 01 15						
781	11.30	Midstream, opposite Pier 48	Lat 40 44 05	1		21.5	28		10,000
		Manhattan	Long 74 01 25						
782	11.35	"	Lat 40 44 05	20		21.0	28		6,400
			Long 74 01 25						
783	11.40	"	Lat 40 44 05	40		20.5	28		4,500
			Long 74 01 25						

Ex. 95. P. 77.

Number of Bacteria in the Water. Hudson River. September 7, 1909.
 High water occurred at Governors Island at 2.36 p. m. The wind was southeast with a velocity
 of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Knot	Feet below surface	Tidal current	Temp. water land Deg.C	Percent water	No. of Bacteria per C.C.
		Approximate							
784	10.50	500 feet off foot of West 42 St.	Lat 40 45 45 Long 74 00 15	45	1	Ebb	21.0	52	2,500
785	10.55	" " " "	Lat 40 45 45 Long 74 00 15	35	35	Ebb	20.5	52	3,000
786	10.55	" " " "	Lat 40 46 55 Long 73 59 25	72	1	Ebb	21.0	52	7,000
787	10.57	" " " "	Lat 40 46 55 Long 73 59 25	"	20	Ebb	20.5	52	8,400
788	11.00	" " " "	Lat 40 46 55 Long 73 59 25	"	35	Ebb	20.5	52	9,000
789	11.55	" " " "	Lat 40 48 20 Long 73 58 25	110	1	Flood	21.0	52	5,000
790	12.00	" " " "	Lat 40 48 20 Long 73 58 25	"	40	Flood	20.0	52	6,300
791	12.15	" " " "	Lat 40 49 30 Long 73 57 30	140	1	Flood	21.0	52	4,200
792	12.17	" " " "	Lat 40 49 30 Long 73 57 30	"	20	Flood	20.5	52	2,300
793	12.20	" " " "	Lat 40 49 30 Long 73 57 30	"	40	Flood	20.0	52	5,500
794	12.37	500 feet off Fort Washington Pt.	Lat 40 51 10 Long 73 56 50	"	1	Flood	21.0	52	2,200
795	12.40	" " " "	Lat 40 51 10 Long 73 56 50	"	40	Flood	20.0	52	4,000
796	1.00	500 feet off Inwood bathing beach	Lat 40 52 20 Long 73 55 55	"	1	Flood	21.0	52	2,100

Ex. 95. P. 78.

Number of Bacteria in the Water. Hudson River. Sept. 7, 1909. (Continued.)

Sample No.	Hour p.m.	Location of Samples		Exact " "	Feet below surface	Tidal current	Temp. water deg. C.	Percent land water	No. of Bacteria per C.C.
		Approximate							
797	1.02	500 feet off Inwood bathing beach	Lat 40 52 20 Long 73 55 35	20	Flood	20.5	52		
798	1.08	" " " "	Lat 40 52 20 Long 73 55 35	40	Flood	20.0	52		2,300
799	1.20	500 feet off Spuyten Duyvil	Lat 40 52 20 Long 73 55 35	1	Flood	21.0	52		1,500
800	1.28	" " " "	Lat 40 52 20 Long 73 55 35	40	Flood	20.0	52		2,600
801	1.48	" " " "	Lat 40 54 15 Long 73 55 00	1	Flood	21.0	52		2,800
802	1.48	" " " "	Lat 40 54 15 Long 73 55 00	20	Flood	20.5	52		2,700
803	1.52	" " " "	Lat 40 54 15 Long 73 55 00	40	Flood	20.0	52		500
804	2.18	500 feet off Federal refinery, Yonkers	Lat 40 56 20 Long 73 54 30	1	Flood	21.0	52		4,700
805	2.19	500 feet " " "	Lat 40 56 20 Long 73 54 30	40	Flood	20.0	52		2,900
806	2.40	500 feet off power plant, " " "	Lat 40 57 00 Long 73 54 10	1	Flood	21.0	52		4,000
807	2.43	" " " "	Lat 40 57 00 Long 73 54 10	20	Flood	21.0	52		4,700
808	2.48	" " " "	Lat 40 57 00 Long 73 54 10	35	Flood	20.5	52		7,800

Ex. 95, P. 79.

Number of Bacteria in the Water. Passaic River, Newark Bay and Kill van Kull.
September 8, 1909.

High water occurred at Governors Island at 3.21 p.m. The wind was southeast, with a velocity of 10 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Kinet. " "	Feet below surface	Tidal Pump. cur- water	Percent land water	No. of bacteria per 0.9.
		Approximate						
809	1.30	Passaic River, near foot of " N.J.R.R. Av. Newark	Lat 40 44 49 Long 74 09 58	1	Flood	25.0	82	129,000
810	1.32	" " " "	Lat 40 44 49 Long 74 09 58	10	"	21.6	82	95,000
811	2.17	Passaic River, 100 feet above " " " "	Lat 40 44 10 Long 74 09 48	1	"	21.6	40	216,000
812	2.20	" " " "	Lat 40 44 10 Long 74 09 48	10	"	21.0	40	106,000
813	2.40	Passaic River, near mouth " " " "	Lat 40 43 18 Long 74 07 20	1	"	21.0	40	12,000
814	2.43	" " " "	Lat 40 43 18 Long 74 07 20	10	"	20.8	40	46,000
815	3.00	Newark Bay, near Laigh Val- " " " "	Lat 40 41 56 Long 74 07 18	1	"	21.0	28	20,000
816	3.02	" " " "	Lat 40 41 56 Long 74 07 18	10	"	20.8	28	28,000
817	3.23	Newark Bay, near bell-buoy " " " "	Lat 40 40 18 Long 74 08 10	1	"	21.0	28	2,000
818	3.28	" " " "	Lat 40 40 18 Long 74 08 10	10	"	20.8	28	1,700
819	3.40	Newark Bay, near C.R.R. of " " " "	Lat 40 39 17 Long 74 08 46	1	"	20.8	28	10,000
820	3.42	" " " "	Lat 40 39 17 Long 74 08 46	15	"	20.8	28	5,000
821	3.48	" " " "	Lat 40 39 17 Long 74 08 46	20	"	20.0	28	8,000

Ex. 98. P. 80.

Number of Bacteria in the Water, Tomsco River, French Bay and Mill van Hall. Sept. 9, 1909.
(Continued).

Sample No.	Hour p.m.	Location of Sample		Depth, fathoms	Tidal Temp. sur- face	Percent water land	No. of bacteria per c.c.
		Approximate	Exact				
302	4.00	Mill van Hall, west end	Lat 40 38 30	1	Flood 50.0	20	1,000
303	4.03	"	Long 74 08 45				
304	4.06	Mill van Hall, opposite Fall- ers Dam	Lat 40 38 30	25	Flood 50.0	30	1,800
305	4.09	"	Long 74 08 45				
306	4.12	Mill van Hall, opposite Fall- ers Dam	Lat 40 38 30	1	" 50.0	20	7,000
307	4.15	"	Long 74 08 45				
308	4.18	"	Lat 40 38 30	20	" 50.0	20	4,400
309	4.21	"	Long 74 08 45				
310	4.24	Mill van Hall, opposite Opp- osite Rock	Lat 40 38 30	40	" 50.0	30	8,800
311	4.27	"	Long 74 08 45				
312	4.30	"	Lat 40 38 30	1	" 50.0	20	8,000
313	4.33	"	Long 74 08 45				
314	4.36	"	Lat 40 38 30	40	" 50.0	20	1,000
315	4.39	"	Long 74 08 45				

En. 35, P. 61.

Boards of Bacteria in the Water. East River, September 9, 1909.
Low water occurred at Governor's Island at 10.30 a.m. The wind was southwest with a
velocity of 8 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal Temp. far- ther out than deg. C	No. of bacteria per c.c.		
		Approximate	Exact					
829	11.10	Off Battery, midstream	Lat 40 41 50	1	84b	20	32	8,000
			Long 74 00 15					
830	11.12	" "	Lat 40 41 50	20	"	29.6	32	2,000
			Long 74 00 15					
831	11.15	" "	Lat 40 41 50	40	"	39	32	1,000
			Long 74 00 15					
832	11.25	At Brooklyn Bridge, midstream	Lat 40 42 30	1	"	20	32	2,800
			Long 73 59 40					
833	11.29	" "	Lat 40 42 30	40	"	19	32	1,800
			Long 73 59 40					
834	11.34	At Williamsburg Bridge, midstream	Lat 40 42 49	3	"	20	32	4,000
			Long 73 58 21					
835	11.39	" "	Lat 40 42 49	50	"	29.8	32	2,000
			Long 73 56 21					
836	12.00	" "	Lat 40 42 49	40	"	19	32	2,400
			Long 73 56 21					
837	12.14	Off East 25 St., midstream	Lat 40 44 00	3	"	20	32	2,800
			Long 73 56 05					
838	12.17	" "	Lat 40 44 00	40	"	19	32	3,800
			Long 73 56 05					
839	12.23	Off East 49 St., east Channel	Lat 40 48 00	1	Flood	20	32	10,000
			Long 73 57 30					
840	12.27	" "	Lat 40 48 00	20	"	19	32	7,700
			Long 73 57 30					
841	12.30	" "	Lat 40 48 00	40	"	19	32	6,000
			Long 73 57 30					
842	12.42	Off East 70 St., east channel	Lat 40 48 45	1	"	20	32	4,000
			Long 73 56 50					
843	12.46	" "	Lat 40 48 45	30	"	19	32	2,300
			Long 73 56 50					

Ex. 95, P. 32.

September 9, 1909.

East River.

Number of Bacteria in the Water.

Low water occurred at Governors Island at 10.38 a.m. The wind was southwest with a velocity of 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Exact below 0	Feet "surface	Tidal Temp. Per-our- water cent		No. of Bacteria per C.C.
		Approximate				rent deg.C	land water	
844	12.55	At Hell Gate		Lat 40 46 50	1	Flood	20	32
				Long 73 56 00				2,000
845	12.57	" "		Lat 40 46 50	20	"	19.5	32
				Long 73 56 00				1,800
846	1.00	" "		Lat 40 46 50	40	"	19	32
				Long 73 56 00				1,400
847	1.22	Between North and South Brother Islands		Lat 40 47 55	1	"	19.5	28
				Long 73 53 55				1,000
848	1.25	"		Lat 40 47 55	40	"	19	28
				Long 73 53 55				600
849	1.50	Off Clausons Point, midstream		Lat 40 46 00	1	"	19	28
				Long 73 50 40				1,500
850	1.55	" "		Lat 40 48 00	30	"	19	28
				Long 73 50 40				2,000
851	2.00	" "		Lat 40 48 00	70	"	18.5	28
				Long 73 50 40				1,200

Ex. 95. P. 83.

Number of Bacteria in the Water. Long Island Sound. Sept. 9, 1909.

Low water occurred at Governors Island at 10.38 a.m. The wind was southeast with a velocity of 5 miles per hour. The flood tide coming up Long Island Sound from the east meets the flood tide coming up the East River near the Stepping Stones Light.

Sample No.	Hour p.m.	Location of Samples			Tidal Temp. cur- rent	Percent land water	No. of bacteria per c.c.
		Approximate	Exact O'	Feet below surface			
852	2.30	500 feet east of Throgs Neck	Lat 40 48 20	1	Flood	19.0	28
			Long 73 47 20				
853	2.33	"	Lat 40 48 20	40	"	18.5	28
			Long 73 47 20				
854	2.55	Near Stepping Stones light	Lat 40 49 30	1	"	19.0	28
			Long 73 46 30				
855	2.57	"	Lat 40 49 30	20	"	18.5	28
			Long 73 46 30				
856	3.00	"	Lat 40 49 30	40	"	18.5	28
			Long 73 46 30				

Ex. 95. P. 84.

Number of Bacteria in the Water. East River. September 10, 1909.
Low water occurred at Governors Island at 11.25 a.m. The wind was southeast with a
velocity of 40 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Exact " "	Feet below surface	Tidal Temp. cur- rent deg.C	Percent water deg.C	No. of Bacteria per C.C.
		Approximate						
857	9.55	Hall Gate off East 90 St.	Lat 40 46 30	1	Ebb	19.5	32	1,200
			Long 73 56 30					
858	9.57	"	Lat 40 46 30	40	"	19.0	32	1,500
			Long 73 56 30					
859	10.10	East Channel off East 89 St.	Lat 40 46 25	1	"	19.5	32	9,000
			Long 73 57 30					
860	10.12	"	Lat 40 46 25	20	"	19.0	32	9,000
			Long 73 57 30					
861	10.15	"	Lat 40 46 25	40	"	19.0	32	7,800
			Long 73 57 30					
862	10.25	Off East 84 St. Midstream	Lat 40 44 25	1	"	19.5	32	7,500
			Long 73 58 00					
863	10.28	"	Lat 40 44 25	40	"	19.0	32	6,000
			Long 73 58 00					
864	10.35	At Williamsburg bridge, mid- stream	Lat 40 42 49	1	"	19.5	32	7,000
			Long 73 58 21					
865	10.37	"	Lat 40 42 49	20	"	19.0	32	5,300
			Long 73 58 21					
866	10.40	"	Lat 40 42 49	40	"	19.0	32	2,500
			Long 73 58 21					
867	10.47	At Brooklyn bridge, midstream	Lat 40 42 20	1	"	19.5	32	6,500
			Long 73 58 48					
868	10.50	"	Lat 40 42 20	40	"	19.0	32	3,000
			Long 73 58 48					
869	10.55	Off Battery, midstream	Lat 40 41 50	1	"	19.5	32	8,000
			Long 74 00 50					
870	10.56	"	Lat 40 41 50	20	"	19.0	32	3,500
			Long 74 00 50					
871	10.59	"	Lat 40 41 50	40	"	19.0	32	3,500
			Long 74 00 50					

Ex. 96. P. 95.

Number of Bacteria in the Water. Kill van Kull. September 11, 1909.

Low water occurred at Governors Island at 12.25 p.m. The wind was northwest with a velocity of 40 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal gauge	Temp. water deg. C.	Percent land water	No. of bacteria per c.c.
		Approximate	Exact					
872	9.40	500 feet off St. George ferry	Lat 40 38 55	1	Hub	19.5	28	9,000
873	9.43	" " " " " " " "	Long 74 04 50		"	19.0	28	8,400
874	10.06	Off New Brighton Station, mid-stream	Lat 40 38 57	1	"	19.5	28	10,000
875	10.08	" " " " " " " "	Long 74 08 25		"	19.0	28	9,000
876	10.10	" " " " " " " "	Lat 40 38 57	20	"	19.0	28	6,800
877	10.25	Off Sailors Inng Harbor, mid-stream	Lat 40 38 50	1	"	19.5	28	12,000
878	10.28	" " " " " " " "	Long 74 06 07		"	19.0	28	9,600
879	10.45	Off Port Richmond ferry, mid-stream	Lat 40 38 55	1	"	19.5	26	10,000
880	10.47	" " " " " " " "	Long 74 07 52		"	19.0	28	8,000
881	10.50	" " " " " " " "	Lat 40 38 35	30	"	19.0	28	4,800
882	11.16	West end of Kill	Long 74 09 52		"	19.5	28	8,400
883	11.18	" " " " " " " "	Lat 40 28 35	30	"	19.0	28	7,200
		" " " " " " " "	Long 74 09 30		"			

Ex. 95. P. 66.

Number of Bacteria in the Water. Lower Bay. September 13, 1909.
 Low water occurred at Governors Island at 1.53 p.m. The wind was
 southeast with a velocity of 8 miles per hour.

Sample No.	Hour A.M.	Location of Samples		Exact	Feet below surface		Tidal Current	Temp. deg.C	Percent land Water	No. of bacteria per c.c.
		Approximate								
894	11.00	Near Ambrose Channel buoy 24	Lat 40 33 30 Long 74 01 26		1	Ebb	19.5	16		800
896	11.05	Near Ambrose Channel buoy 24	Lat 40 33 30 Long 74 01 26		20	Ebb	19.0	16		1,200
896	11.10	Near Ambrose Channel buoy 24	Lat 40 33 30 Long 74 01 26		35	Ebb	19.5	16		1,100
897	11.30	In Fourteen Foot Channel near buoy A C 23	Lat 40 32 25 Long 74 00 45		1	Ebb	19.5	16		2,000
898	11.36	In Fourteen Foot Channel near buoy A C 20	Lat 40 32 25 Long 74 00 45		25	Ebb	19.5	16		2,800
899	12.36	Between Ambrose and Fourteen Foot Channels near buoy A C 10	Lat 40 31 00 Long 73 59 45		1	Ebb	19.5	16		1,800
890	12.40	Between Ambrose and Fourteen Foot Channels near buoy A C 10	Lat 40 31 00 Long 73 59 45		20	Ebb	19.0	16		2,000
891	1.06	About 1000 feet north of buoy A C 4	Lat 40 30 20 Long 73 57 00		1	Ebb	20.0	16		1,400
892	1.10	About 1000 feet north of buoy A C 4	Lat 40 30 20 Long 73 57 00		20	Ebb	19.5	16		1,000
893	1.20	Near Ambrose Channel buoy 4	Lat 40 30 10 Long 73 56 56		1	Ebb	20.0	16		1,700
894	1.25	Near Ambrose Channel buoy 4	Lat 40 30 10 Long 73 56 56		35	Ebb	19.5	16		1,700
895	1.35	Near Ambrose Channel buoy 3	Lat 40 29 55 Long 73 57 06		1	Ebb	20.0	16		1,100

Number of Bacteria in the Water. Lower Bay. September 15, 1909.
 Low water occurred at Governors Island at 1.03 p.m. The wind
 was southeast with a velocity of 8 miles per hour.

Sample No.	Locality of Sample	Approximate	Lat	Long	Feet below surface	Tidal Current	Temp. Water deg. C	Percent Bacteria per c.c.
894	1.37 Near Arthur's Channel buoy 3		Lat 40 39 56 Long 73 57 06		20	ebb	19.8	16
899	1.07 100 feet north of Gedney Channel buoy 6		Lat 40 39 30 Long 73 57 25		1	Flood	20.0	16
896	1.80 100 feet north of Gedney Channel buoy 6		Lat 40 39 30 Long 73 57 25		80	Flood	19.5	16
899	2.10 Between Gedney Channel buoys 6 and 7		Lat 40 39 28 Long 73 57 00		1	Flood	19.6	16
900	2.15 Between Gedney Channel buoys 6 and 7		Lat 40 39 28 Long 73 57 25		20	Flood	19.8	16
901	2.22 200 feet south of Gedney Channel buoy 0		Lat 40 39 10 Long 73 57 00		1	Flood	19.5	16
902	2.25 200 feet south of Gedney Channel buoy 0		Lat 40 39 10 Long 73 57 00		28	Flood	19.0	16
903	2.40 100 feet south of Sandy Hook buoy 3 1 off		Lat 40 39 15 Long 73 54 15		1	Flood	19.5	16
904	2.45 100 feet south of Sandy Hook buoy 3 1 off		Lat 40 39 15 Long 73 54 15		20	Flood	19.0	16
905	2.55 100 feet southeast of buoy 3 1 off		Lat 40 39 10 Long 73 54 15		1	Flood	19.5	16
906	2.55 100 feet southeast of buoy 3 1 off		Lat 40 39 10 Long 73 54 15		30	Flood	19.0	16
907	2.55 100 feet southeast of buoy 3 1 off		Lat 40 39 10 Long 73 54 15		1	Flood	19.5	16
908	2.55 100 feet southeast of buoy 3 1 off		Lat 40 39 10 Long 73 54 15		30	Flood	19.0	16

Sta. 98. S. 90.

Fishes of Bacteria in the Water. Lower Bay. September 13, 1909.
Low water occurred at Governors Island at 3.33 P.M. The wind
was southeast with a velocity of 8 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Tidal Current	Temp. Water, deg. C.	Percent Land Water	No. of bacteria per c.c.
		Approximate	Exact				
907	3.30	1000 feet northwest of buoy B 8	Lat 40 29 55 Long 74 01 20	1	Flood	10.8	16
908	3.36	1000 feet northwest of buoy B 8	Lat 40 29 55 Long 74 01 50	10	Flood	10.8	16
909	3.46	800 feet southwest of buoy C 5 1 near Seash Channel	Lat 40 29 36 Long 74 00 30	1	Flood	10.8	16
910	4.00	800 feet southwest of buoy C 5 1 near Seash Channel	Lat 40 29 30 Long 74 00 30	20	Flood	10.8	16

Ex. 95, P. 69.

1473

Number of Bacteria in the Water. Lower Bay. September 14, 1909.
 Low water occurred at Governors Island at 2.36 P.M. The wind was southeast with a
 velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Fidal cur- rent	Temp. deg.C	Percent land water	No. of bacteria per c.c.
		Approximate	Exact					
911	10.30	Main Ship Channel, 200 feet " east of West Bank light	Lat 40 32 20 Long 74 02 30	1	Ebb	19.5	16	450
912	10.35	"	Lat 40 32 20 Long 74 02 30	35	"	18.5	16	300
913	10.55	Swash Channel, near Main Ship Channel	Lat 40 31 26 Long 74 02 20	1	"	19.5	16	280
914	11.00	"	Lat 40 31 25 Long 74 02 20	30	"	19.0	16	160
915	11.25	Swash Channel, 300 feet north " east of buoy C S 3	Lat 40 30 50 Long 74 01 45	1	"	19.5	16	200
916	11.30	"	Lat 40 30 50 Long 74 01 45	20	"	19.0	16	120
917	11.47	Swash Channel, 500 feet south " of Homer Shoals light	Lat 40 29 45 Long 74 00 45	1	"	19.5	16	150
918	11.50	"	Lat 40 30 45 Long 74 00 45	30	"	19.0	16	140
919	1.00	Swash Channel, 500 feet south " of buoy E S 4	Lat 40 30 00 Long 73 59 45	1	"	19.5	16	300
920	1.05	"	Lat 40 30 00 Long 73 59 45	20	"	19.0	16	190
921	1.20	Swash Channel, 500 feet north " of buoy C S 1	Lat 40 29 45 Long 74 00 30	1	"	19.5	16	-
922	1.25	"	Lat 40 29 45 Long 74 00 30	25	"	19.0	16	400
923	1.45	Homer Shoals, 500 feet north " west of buoy H S 2	Lat 40 29 50 Long 73 59 20	1	"	19.5	16	400
924	1.50	"	Lat 40 29 50 Long 73 59 20	25	"	19.0	16	150

Ex. 95, p. 90.

Number of Bacteria in the Water. Lower Bay. September 14, 1909.
(Continued)

Sample No.	Hour p.m.	Location of Samples			Tidal cur- rent	Temp. water deg.C	Percent land water	No. of bacteria per C.C.
		Approximate	Exact	Feet below surface				
925	2.05	500 feet southeast of buoy A C 9, Ambrose Channel	Lat 40 30 45 Long 73 59 45	1	Ebb	19.5	16	270
926	2.10	500 feet southeast of buoy A C 9, Ambrose Channel	Lat 40 30 45 Long 73 59 45	20	"	19.0	16	260
927	2.15	500 feet northwest of buoy A C 10, Ambrose Channel	Lat 40 31 00 Long 73 59 55	1	"	19.5	16	200
928	2.20	"	Lat 40 31 00 Long 73 59 55	25	"	19.0	16	250
929	2.45	One-Third of distance between buoy A C 8 and Manhattan Beach	Lat 40 32 05 Long 73 57 40	1	"	19.5	16	130
930	2.50	"	Lat 40 32 05 Long 73 57 40	20	"	19.0	16	200
931	3.10	Two-Thirds of distance between buoy A C 8 and Manhattan Beach	Lat 40 33 05 Long 73 57 25	1	"	19.5	16	560
932	3.15	"	Lat 40 33 05 Long 73 57 25	22	"	19.0	16	100

Ex. 95. P. 91.

Number of Bacteria in the Water. Passaic River, Newark Bay and Kill van Kull.
Low water occurred at Governors Island at 2.43 P.M. The wind was southeast with a velocity of 20 miles per hour.
September 12, 1909.

Sample No.	Hour P.M.	Location of Samples	Approximate	Exact	Tidal		Temp. water deg. C.	Percent No. of bacteria per c.c.
					Feet below surface	Current		
933	12.40	Passaic River near foot of E.J.R.R. Ave. Newark		Lat 40 44 49 Long 74 09 55	1	ebb	22.0	230,000
934	12.46	Passaic River near foot of E.J.R.R. Ave. Newark		Lat 40 44 49 Long 74 09 55	10	ebb	21.5	160,000
935	1.05	Passaic River near P.R.R. freight bridge below Newark		Lat 40 44 10 Long 74 09 46	1	ebb	22.0	90,000
936	1.06	Passaic River near P.R.R. freight bridge below Newark		Lat 40 44 10 Long 74 09 46	10	ebb	21.5	40,000
937	1.25	Passaic River near mouth		Lat 40 43 18 Long 74 07 20	1	ebb	21.0	32,000
938	1.30	Passaic River near mouth		Lat 40 43 18 Long 74 07 20	10	ebb	20.5	17,000
939	1.46	Newark Bay, near Lehigh Valley R.R. bridge		Lat 40 41 56 Long 74 07 18	1	ebb	20.0	24,000
940	1.50	Newark Bay, near Lehigh Valley R.R. bridge		Lat 40 41 56 Long 74 07 18	20	ebb	19.5	12,000
941	2.05	Newark Bay near bell-buoy off Centreville		Lat 40 40 15 Long 74 06 10	1	ebb	20.0	12,000
942	2.06	Newark Bay near bell-buoy off Centreville		Lat 40 41 15 Long 74 06 10	20	ebb	20.0	7,400
943	2.16	Newark Bay near C.R.R. of N.J. drawbridge		Lat 40 39 17 Long 74 06 46	1	ebb	20.0	9,000
944	2.18	Newark Bay near C.R.R. of N.J. drawbridge		Lat 40 39 17 Long 74 06 46	20	ebb	19.0	7,800
945	2.25	Kill van Kull west end		Lat 40 38 35 Long 74 06 45	1	ebb	20.0	7,900
946	2.27	Kill van Kull west end		Lat 40 38 35 Long 74 06 45	20	ebb	19.5	6,800
947	2.30	Kill van Kull, west end		Lat 40 38 35 Long 74 06 45	35	ebb	19.5	5,400

Ex. 95. P. 95.

Number of Bacteria in the Water. Passaic River, Newark Bay and Kill van Kull. September 15, 1909.

Low water occurred at Governors Island at 2.53 p.m. The wind was southeast with a velocity of 20 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Exact	Feet below surface	Tidal Current	Temp. Water deg. C.	Percent land Water	No. of Bacteria per C.C.
		Approximate							
948	2.43	Kill van Kull off Sailors Snug Harbor	Lat 40 38 50 Long 74 06 26	0	1	Ebb	20.0	28	9,200
949	2.45	Kill van Kull off Sailors Snug Harbor	Lat 40 38 50 Long 74 06 26	0	30	Ebb	19.8	28	6,400
950	2.55	Kill van Kull off Constable Hook	Lat 40 39 08 Long 74 06 18	0	1	Ebb	20.0	28	6,800
951	2.57	Kill van Kull off Constable Hook	Lat 40 39 08 Long 74 06 18	0	20	Ebb	19.8	28	5,900
952	3.00	Kill van Kull off Constable Hook	Lat 40 39 08 Long 74 06 18	0	40	Ebb	19.0	28	4,900

Ex. 95. P. 93.

Number of Bacteria in the Water, Arthur Kill, September 16, 1909.
Low water occurred at Governors Island at 3.25 p.m. The wind was
southeast with a velocity of 5 miles per hour.

Sample No.	Hour A.M.	Approximate Location of Samples	Feet below surface		Tidal Current	Temp. Water deg. c.	Percent bacteriæ per c.c.	No. of bacteria per c.c.
			East	West				
953	11.55	Rahway River 1/2 mile from mouth	Lat 40 35 55 Long 74 12 45	1	Ebb	20.0	64	10,000
954	11.57	Rahway River 1/2 mile from mouth	Lat 40 35 55 Long 74 12 45	0	Ebb	19.5	64	80,000
955	12.25	Arthur Kill opposite mouth of Rahway River	Lat 40 36 35 Long 74 12 15	1	Ebb	20.0	20	23,000
956	12.30	Arthur Kill opposite mouth of Rahway River	Lat 40 35 35 Long 74 12 15	10	Ebb	19.5	20	20,000
957	1.05	Arthur Kill off Fresh Kill	Lat 40 34 45 Long 74 12 35	1	Ebb	20.0	20	9,000
958	1.10	Arthur Kill off Fresh Kill	Lat 40 34 45 Long 74 12 35	15	Ebb	19.5	20	8,000
959	1.20	Arthur Kill near buoy S. A. off Smoking Point	Lat 40 33 30 Long 74 13 40	1	Ebb	19.0	20	3,000
960	1.25	Arthur Kill near buoy S. A. off Smoking Point	Lat 40 33 30 Long 74 13 40	25	Ebb	18.5	20	3,450
961	2.00	Arthur Kill near buoy S. A. north of Rahway River	Lat 40 35 45 Long 74 12 05	1	Ebb	19.5	20	9,000
962	2.05	Arthur Kill near buoy S. A. north of Rahway River	Lat 40 35 45 Long 74 12 05	12	Ebb	19.5	20	9,000
963	2.35	Arthur Kill 1000 feet west of Elizabethport drawbridge	Lat 40 35 10 Long 74 11 55	1	Ebb	19.5	20	90,000
964	2.35	Arthur Kill 1000 feet west of Elizabethport drawbridge	Lat 40 35 10 Long 74 11 55	12	Ebb	19.0	20	20,000

Number of Bacteria in the Water, Arthur Kill, September 16, 1909.
Low water occurred at Governors Island at 3.25 p.m. The wind was
southeast with a velocity of 8 miles per hour.

Sample No.	Hour P.M.	Location of Samples Approximate	Exact		Feet below surface	Tidal Current	Temp. Water deg.-c.	Percent land Water	No. of bacteria per c.c.
			Lat	Long					
965	2.50	Arthur Kill 1000 feet east of Elizabethport drawbridge	Lat 40 38 50 Long 74 11 45		1	Ebb	19.8	28	7,000
966	2.58	Arthur Kill 1000 feet east of Elizabethport drawbridge	Lat 40 39 50 Long 74 11 45		15	Ebb	19.0	28	3,000
967	3.05	Arthur Kill near buoy 3 4 at east end	Lat 40 39 48 Long 74 10 48		1	Ebb	19.8	28	3,800
968	3.09	Arthur Kill near buoy 3 4 at east end	Lat 40 39 48 Long 74 10 48		15	Ebb	19.0	28	4,600
969	3.17	Midway between Shooters Island and Mariners Harbor	Lat 40 38 35 Long 74 09 30		1	Ebb	19.5	28	9,000
970	3.20	Midway between Shooters Island and Mariners Harbor	Lat 40 39 35 Long 74 09 30		30	Ebb	19.0	28	4,800
971	3.35	West end of Kill van Noort	Lat 40 38 35 Long 74 08 45		1	Ebb	19.8	28	7,000
972	3.40	East end of Kill van Noort	Lat 40 38 35 Long 74 08 45		35	Ebb	19.0	28	2,000

Ex. 98, P. 55.

Number of Bacteria in the Water. Jamaica Bay Sept. 17. 1909
 Low water occurred at Governors Island at 4.25 p. m. The wind was northwest with a velocity
 of 5 miles per hour.

Sample No.	Hour p. m.	Location of Samples Approximate	Exact		Feet below surface	Tidal current	Temp. Deg. C	Percent water	Number of Bacteria per cc.
			0	"					
973	10.40	Jamaica Bay near Dead House Creek	Lat 40 34 35	Long 73 54 25	1	ebb	19.5	20	4,000
974	10.45	"	Lat 40 34 35	Long 73 54 25	15	"	19.0	20	7,200
975	11.00	Jamaica Bay, 200 feet Barren Island	Lat 40 34 40	Long 73 54 25	1	"	19.5	20	3,500
976	11.05	"	Lat 40 34 40	Long 73 53 00	20	"	19.0	20	1,600
977	11.25	Just south of Ruffle Bar	Lat 40 35 40	Long 73 53 00	1	"	19.5	20	4,400
978	11.30	"	Lat 40 35 40	Long 73 51 35	15	"	19.0	20	3,100
979	11.50	About 1 mile off Canarsie breakwater	Lat 40 36 45	Long 73 51 35	1	"	19.5	20	6,100
980	11.55	"	Lat 40 36 45	Long 73 52 35	9	"	19.0	20	3,600
981	12.10	200 feet off Canarsie Light	Lat 40 37 20	Long 73 52 35	1	"	19.5	20	8,000
982	12.12	"	Lat 40 37 20	Long 73 52 45	10	"	19.5	20	3,100
983	1.05	"	Lat 40 37 40	Long 73 52 45	1	"	19.5	20	3,900
984	1.08	"	Lat 40 37 40	Long 73 53 10	8	"	19.5	20	3,900

Ex. 95. P. 96.

Number of Bacteria in the Water. Jamaica Bay. September 17, 1909.

Low water occurred at Governors Island at 4.25 p.m. The wind was northwest with a velocity of 5 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Exact " "	Feet below surface	Tidal current	Temp. water Deg. C.	Percent land water	No. of Bacteria per C.C.
		Approximate							
985	2.00	1000 feet off mouth of Fresh Creek		Lat 40 38 20 Long 73 52 15	1	2bb	19.5	20	36,000
986	2.15	1000 feet off mouth of second creek		Lat 40 38 30 Long 73 52 16	1	2bb	13.5	20	40,000
987	2.30	1/2 mile north of mouth Second creek		Lat 40 38 45 Long 73 51 36	1	2bb	19.5	20	5,300
988	3.00	1000 feet off shore at Sand Bay		Lat 40 38 06 Long 73 52 40	1	2bb	19.5	20	16,000

Ex. 96. P. 37.

Sept. 19, 1909.

Hudson River

Number of Bacteria in the Water.

High water occurred at Governors Island at 10.34 a. m. The wind was southwest with a velocity of 10 miles per hour.

Sample No.	Hour a. m.	Location of Samples.		Feet below surface	Tidal current	Temp. Deg. C	Percent water land	Number of Bacteria per cc.
		Approximate	Exact					
989	10.05	500 feet off C.R.R. of N.J. ferry Communipaw	Lat 40 42 25 Long 74 02 00	1	Flood	19.5	29	9,500
990	10.08	" "	Lat 40 42 25 Long 74 02 00	40	"	19.5	29	4,500
991	10.15	500 feet off P.R.R. ferry Jersey City	Lat 40 43 00 Long 74 01 55	1	"	19.5	29	9,600
992	10.17	" "	Lat 40 43 00 Long 74 01 55	20	"	19.0	28	7,800
993	10.19	" "	Lat 40 43 00 Long 74 01 55	40	"	19.5	28	5,300
994	10.35	500 feet off Lackawanna ferry Hoboken	Lat 40 43 40 Long 74 01 50	1	"	19.5	28	12,000
995	10.38	" "	Lat 40 43 40 Long 74 01 50	40	"	19.5	28	6,800
996	10.50	500 feet off Stevens ferry Hoboken	Lat 40 44 40 Long 74 01 20	1	"	19.5	28	8,400
997	10.52	" "	Lat 40 44 40 Long 74 01 20	20	"	19.0	28	7,900
998	10.55	" "	Lat 40 44 40 Long 74 01 20	40	"	19.5	28	4,800
999	11.25	500 feet off west shore ferry Weehawken	Lat 40 46 45 Long 74 00 20	1	"	19.5	28	7,800
1000	11.28	" "	Lat 40 46 45 Long 74 00 20	40	"	19.5	28	4,200

Ex. 98. P. 98.

Number of Bacteria in the Water. Lower Bay. September 20, 1909.

Low water occurred at Governors Island at 8.26 p.m. The wind was southeast, with a velocity of 40 miles per hour.

Sample No.	Hour S.M.	Location of Samples		Fath. below surface	Tidal current	Temp. Reg. C	Percent water per U.C.	No. of bacteria per U.C.
		Approximate	Exact					
1001	11.55	500 feet southwest of West Bank light	Lat 40 38 10 Long 74 02 40	1	Flood	19.0	8	5,800
1002	11.55	" " "	Lat 40 38 10 Long 74 02 40	20	Flood	18.5	8	700
1003	12.20	About 1 mile from West Bank light	Lat 40 31 25 Long 74 03 00	1	Flood	19.0	8	4,800
1004	12.22	" on line with Fort Monmouth	Lat 40 31 25 Long 74 03 00	20	Flood	18.5	8	3,900
1005	1.00	Near white buoy 5 on same line	Lat 40 30 20 Long 73 05 15	1	Flood	19.0	8	2,900
1006	1.05	Near white buoy 5 on same line	Lat 40 30 30 Long 73 05 15	20	Flood	18.5	8	2,800
1007	1.20	Farther south on same line	Lat 40 29 35 Long 74 03 25	1	Flood	19.0	8	2,500
1008	1.25	" " "	Lat 40 29 35 Long 74 03 25	25	Flood	18.5	8	3,300
1009	1.40	Farther south on same line, near buoy C 1	Lat 40 28 35 Long 74 03 15	1	Flood	19.0	8	3,000
1010	1.45	" " "	Lat 40 28 35 Long 74 03 15	25	Flood	18.5	8	1,400
1011	2.00	Farther south on same line	Lat 40 27 40 Long 74 02 40	1	Flood	19.0	8	780
1012	2.03	" " "	Lat 40 27 40 Long 74 02 40	20	Flood	18.5	8	900
1013	2.20	About 1 mile off Atlantic Highlands	Lat 40 26 25 Long 74 03 15	1	Flood	18.5	8	800

Ex. 95. P. 99

Number of Bacteria in the Water. Lower Bay. September 20, 1909. (Continued.)

Sample No.	Hour p.m.	Location of Samples		Feet below surface	Tidal current	Temp. water Deg. C.	Percent land water per C.C.	No. of Bacteria per C.C.
		Approximate	Exact					
1014	2.25	About 1 mile off Atlantic Highlands	Lat 40 26 25 Long 74 03 15	20	Flood	19.5	8	600
1015	2.40	About 1/2 mile off Atlantic Highlands	Lat 40 25 50 Long 74 03 25	1	Ebb	19.0	8	800
1016	2.45	About 1/2 mile off Atlantic Highlands	Lat 40 25 50 Long 74 03 25	15	Ebb	18.5	8	400
1017	3.40	About 2000 feet west of buoy S 1	Lat 40 29 00 Long 74 07 50	1	Ebb	19.0	8	500
1018	3.45	" W. off Point Comfort	Lat 40 29 00 Long 74 07 50	15	Ebb	18.5	8	400
1019	4.00	Nearer Great Kills	Lat 40 29 50 Long 74 07 40	1	Ebb	19.0	8	400
1020	4.02	" " "	Lat 40 29 50 Long 74 07 40	25	Ebb	18.5	8	
1021	4.20	1 1/2 miles south of Great Kills	Lat 40 30 35 Long 74 07 40	1	Ebb	19.0	8	300
1022	4.25	" " " "	Lat 40 30 35 Long 74 07 40	15	Ebb	18.5	8	300
1023	4.35	1 mile south of Great Kills	Lat 40 31 10 Long 74 07 45	1	Ebb	19.0	8	550
1024	4.35	1 " " " "	Lat 40 31 10 Long 74 07 45	10	Ebb	18.5	8	250

Ex. 98. P. 100

Number of Bacteria in the Water. Harrison Bay. September 21, 1909.
Low water occurred at B-curve island at 6.40 p.m. The wind was southeast, with a
velocity of 8 miles per hour.

Sample No.	Hour a.m.	Location of Sample		Exact depth fathoms	Feet below surface	Flood current	Dump water log-C	Percent No. of bacteria per C.C.
		Approximate						
1028	11.48	1000 feet east of buoy 3 S off		Lat 40 30 30	1	Flood	19.0	8
				Long 74 01 06				
1026	11.47	" Bagnine Point "	"	Lat 40 30 30	20	Flood	18.8	8
				Long 74 01 06				
1027	12.08	Near buoy 3 S in Bagnine Channel		Lat 40 30 30	1	Flood	19.0	8
				Long 74 11 16				
1029	12.07	" " " "	"	Lat 40 30 30	25	Flood	18.8	8
				Long 74 11 16				
1029	12.30	1000 feet southeast of Prince		Lat 40 30 30	1	Flood	19.0	8
		Bay light		Long 74 12 36				
1030	12.22	" " " "	"	Lat 40 30 30	20	Flood	18.8	8
				Long 74 12 36				
1031	12.30	Near red buoy 3 S		Lat 40 32 43	1	Flood	19.0	8
				Long 74 13 36				
1032	12.32	" " " "	"	Lat 40 32 43	25	Flood	18.8	8
				Long 74 13 36				
1033	12.36	Near red buoy 3 S		Lat 40 32 43	1	Flood	19.0	8
				Long 74 13 36				
1034	12.37	" " " "	"	Lat 40 32 43	25	Flood	18.8	8
				Long 74 13 36				
1038	1.00	500 feet north of Brent Isd.		Lat 40 29 08	25	Flood	18.8	8
				Long 74 14 20				
1036	1.05	" " " "	"	Lat 40 29 18	1	Flood	19.0	8
				Long 74 15 18				
1036	1.05	" " " "	"	Lat 40 29 18	16	Flood	18.8	8
				Long 74 15 18				

Ex. 95, P. 101

Number of Bacteria in the Water. Arthur Kill. September 21, 1909.
Ice water occurred at Governors Island at 6.30 p.m. The wind was southeast, with a
velocity of 6 miles per hour.

Sample No.	Hour p.m.	Location of Sample	Feet below surface		Tidal current	Temp. water deg. C	Percent land bacteria per C.C.
			Exact	Approx.			
1037	1.20	Lower end of Kill, 800 feet west of buoy B	Lat 40 20 10 Long 74 15 40	1	Flood	19.6	0
1038	1.25	Lower end of Kill, 800 feet west of buoy B	Lat 40 20 10 Long 74 15 40	80	Flood	19.6	0
1039	1.40	Off Fort Belvoir, 1000 feet west of buoy B	Lat 40 20 10 Long 74 15 15	1	Flood	19.0	0
1040	1.45	" " " "	Lat 40 20 10 Long 74 15 15	45	Flood	19.0	0
1041	2.15	Off Hooking Point, 200 feet west of buoy B	Lat 40 20 20 Long 74 15 15	1	Flood	19.0	0
1042	2.17	" " " "	Lat 40 20 20 Long 74 15 15	20	Flood	19.0	0
1043	2.30	Off Fresh Kill	Lat 40 24 00 Long 74 15 40	1	Flood	19.0	0
1044	2.40	" " " "	Lat 40 24 00 Long 74 15 40	20	Flood	19.0	0

Ex. 98. P. 1007

Number of Bacteria in the water. Kill van Kull, Upper Bay and East River.
September 23, 1909.

High water occurred at Governors Island at 2.14 p.m. The wind was southwest, with a velocity of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Exact Lat Long	Feet below surface	Tidal current	Temp. water Deg. C	Percent land water	No. of Bacteria per C.C.
		Approximate							
1045	11.10	West end of Kill van Kull, near " buoy S 2	" "	Lat 40 38 30 Long 74 08 30	1	Flood	18.5	20	18,000
1046	11.12	" " "	" "	Lat 40 38 30 Long 74 08 30	40	Flood	18.0	20	12,000
1047	11.30	Kill van Kull, off Livingston station	" "	Lat 40 39 45 Long 74 06 50	1	Flood	18.5	20	12,000
1048	11.32	" " "	" "	Lat 40 38 45 Long 74 06 50	20	Flood	18.0	20	9,000
1049	11.35	" " "	" "	Lat 40 38 45 Long 74 06 50	40	Flood	18.0	20	7,000
1050	12.20	East end of Kill van Kull, off Constable Hook	" "	Lat 40 39 05 Long 74 05 15	1	Flood	18.5	20	8,000
1051	12.25	" " "	" "	Lat 40 39 05 Long 74 05 15	40	Flood	18.0	20	3,600
1052	12.50	Upper Bay, near Robbins Reef bell buoy	" "	Lat 40 39 15 Long 74 03 50	1	Flood	19.5	20	6,400
1053	12.52	" " "	" "	Lat 40 39 15 Long 74 03 50	20	Flood	18.0	20	5,000
1054	12.55	" " "	" "	Lat 40 39 15 Long 74 03 50	40	Flood	18.0	20	3,800
1055	1.05	Upper Bay, near buoy G 2	" "	Lat 40 40 10 Long 74 03 12	1	Flood	18.5	20	5,400
1056	1.07	" " "	" "	Lat 40 40 10 Long 74 03 12	40	Flood	18.0	20	

Ex. 95. p. 103

Number of Bacteria in the Water. Kill van Kull. Upper Bay and East River.
(Continued.) September 23, 1909.

Sample No.	Hour p.m.	Location of Samples		Lat	Long	Feet below surface	Tidal current	Temp. Deg. C.	Percent water	No. of Bacteria per C.C.
		Approximate	Exact							
1057	1.15	Upper Bay, near buoy S 2, off Liberty Island	Lat 40 41 06 Long 74 02 40	1	Flood	18.5	20	9,000		
1058	1.17	" " " "	Lat 40 41 06 Long 74 02 40	20	Flood	18.0	20	8,400		
1059	1.18	" " " "	Lat 40 41 06 Long 74 02 40	40	Flood	18.0	20	4,500		
1060	1.25	East River, between Governors Island and Battery	Lat 40 41 50 Long 74 01 00	1	Flood	18.5	20	10,000		
1061	1.27	" " " "	Lat 40 41 50 Long 74 01 00	40	Flood	18.0	20	7,200		
1062	1.35	East River at Brooklyn bridge	Lat 40 42 20 Long 73 59 48	1	Flood	18.5	20	12,000		
1063	1.37	" " " "	Lat 40 42 20 Long 73 59 48	20	Flood	18.0	20			
1064	1.40	" " " "	Lat 40 42 20 Long 73 59 48	40	Flood	18.0	20	6,400		
1065	1.50	East River at Manhattan bridge	Lat 40 42 25 Long 73 59 25	1	Flood	18.5	20	12,000		
1066	1.52	" " " "	Lat 40 42 25 Long 73 59 25	40	Flood	18.0	20	8,600		

Ex. 95. P. 104

Number of Bacteria in the Water, Upper Bay, September 30, 1903.

Low water occurred at Governors Island at 3.17 p.m. The wind was northwest with a velocity of 30 miles per hour.

Sample No.	Hour A.M.	Location of Samples		Tidal current	Temp. water deg.c.	Percent No. of land bacteria water per c.c.	
		Approximate	Extra			land water	per c.c.
1067	10.36	200 feet off Battery	Lat 40 42 10 Long 74 01 10	1	18.5	28	9,000
1068	10.38	200 feet off Battery	Lat 40 42 10 Long 74 01 10	40	18.0	28	3,600
1069	10.52	200 feet west of Governors Island	Lat 40 41 35 Long 74 01 15	1	13.6	28	4,200
1070	10.54	200 feet west of Governors Island	Lat 40 41 35 Long 74 01 15	20	18.0	28	3,000
1071	10.56	200 feet west of Governors Island	Lat 40 41 35 Long 74 01 15	40	18.0	28	2,800
1072	11.55	Near Buoy G 2	Lat 40 40 10 Long 74 03 12	1	18.5	28	6,400
1073	11.57	Near Buoy G 2	Lat 40 40 10 Long 74 03 12	40	18.0	28	2,800
1074	12.07	1000 feet west of Robbins Reef light	Lat 40 39 25 Long 74 03 45	1	18.5	28	4,800
1075	12.10	1000 feet west of Robbins Reef light	Lat 40 39 25 Long 74 03 45	20	18.0	28	3,500

Ex. 95. P. 105

Number of Bacteria in the Water. Kill van Kull. September 30, 1909.
Low water occurred at Governors Island at 3.17 p.m. The wind was northwest with a
velocity of 30 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Feet below surface	Tidal Temp. cur- water rent deg.C	Percent land water	No. of bacteria per C.C.	
		Approximate	Exact					
1076	12.20	East end of Kill	Lat 40 32 05 Long 74 06 15	1	2bb	18.5	28	4,800
1077	12.22	"	Lat 40 32 05 Long 74 06 15	20	"	18.0	28	3,300
1078	12.25	"	Lat 40 32 05 Long 74 06 15	40	"	18.0	28	3,000
1079	12.35	Off Sailors Snug Harbor	Lat 40 32 50 Long 74 06 07	1	"	18.5	28	5,200
1080	12.39	"	Lat 40 32 50 Long 74 06 07	40	"	18.0	28	2,800
1081	1.05	Off Fort Richmond	Lat 40 33 35 Long 74 07 52	1	"	18.5	28	6,000
1082	1.07	"	Lat 40 33 35 Long 74 07 52	20	"	18.0	28	3,800
1083	1.09	"	Lat 40 33 35 Long 74 07 52	40	"	18.0	28	3,000
1084	2.40	West end of Kill	Lat 40 35 30 Long 74 08 30	1	"	18.5	28	6,200
1085	2.43	"	Lat 40 35 30 Long 74 08 30	40	"	18.0	28	3,600

Ex. 95. P. 106

October 1, 1909.

Number of Bacteria in the Water. East River.

The wind was northwest, with a

High water occurred at Governors Island at 9.21 a.m.

velocity of 40 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Exact "	Feet below surface	Tidal current	Temp.		No. of bacteria per c.c.
		Approximate					water	land	
							Deg. C.	Deg. F.	
1086	9.50	500 feet off Pier 34, Brooklyn	Lat 40 41 13	1	Flood	18.0	28	28	5,400
		"	Long 74 00 30						
1087	9.52	"	Lat 40 41 10	40	"	"	18.0	28	3,600
		"	Long 74 00 30						
1088	10.00	At Brooklyn Bridge, 500 feet off	Lat 40 42 18	1	"	"	18.0	28	6,000
		Brooklyn shore	Long 73 59 45						
1089	10.02	"	Lat 40 42 15	20	"	"	18.0	28	4,800
		"	Long 73 59 45						
1090	10.04	"	Lat 40 42 18	40	"	"	18.0	28	3,800
		"	Long 73 59 45						
1091	10.16	At Williamsburg Bridge, 500 feet off	Lat 40 42 45	1	"	"	18.0	28	5,800
		Brooklyn shore	Long 73 59 10						
1092	10.18	"	Lat 40 42 45	40	"	"	18.0	28	4,200
		"	Long 73 59 10						
1093	10.30	Opposite East 34 St., 500 feet off	Lat 40 44 30	1	"	"	18.0	28	7,200
		Brooklyn shore	Long 73 57 45						
1094	10.31	Opposite East 34 St., 500 feet off	Lat 40 44 30	20	"	"	18.0	28	4,800
		Brooklyn shore	Long 73 57 45						
1095	10.33	"	Lat 40 44 30	40	"	"	18.0	28	3,800
		"	Long 73 57 45						
1096	10.50	At Queensboro bridge, east channel	Lat 40 45 20	1	"	"	18.0	28	6,000
		"	Long 73 57 10						
1097	10.52	"	Lat 40 45 20	40	"	"	18.0	28	3,200
		"	Long 73 57 10						
1098	11.06	At Hell Gate	Lat 40 46 50	1	"	"	18.0	28	4,800
		"	Long 73 56 00						
1099	11.06	"	Lat 40 46 50	20	"	"	18.0	28	3,800
		"	Long 73 56 00						
1100	11.08	"	Lat 40 46 50	40	"	"	18.0	28	2,000
		"	Long 73 56 00						

Ex. 95. P. 107

Number of bacteria in the water. Long Island Sound. October 1, 1908.
 Low water occurred at Governors Island at 4.08 p.m. The wind was northeast with a
 velocity of 40 miles per hour.

Sample No.	Hour p.m.	Location of Bacteria		Feet below surface	Fidel sur- fact	Temp. water deg.C	Percent land water	No. of bacteria per 100
		Approximate	Exact					
1101	1.20	Long Island Sound, near	Lat 40 43 20 Long 73 47 20	1	226	18.0	28	1,200
1102	1.22	" Throgs Neck	Lat 40 43 20 Long 73 47 20	26	"	18.0	28	800
1103	1.24	"	Lat 40 43 20 Long 73 47 20	50	"	18.0	28	600

22. 25. P. 108

Number of Bacteria in the Water. West River, October 1, 1909.
 Low water occurred at Ossining Island at 4.00 P.M. The wind
 was northwest with a velocity of 40 miles per hour.

Sample No.	Hour P.M.	Location of Samples		Feet below surface	Tidal current	Temp. deg. C	Percent land water	No. of bacteria per C.C.
		Approximate	Exact					
1104	1.50	Between North and South Brookhaven Islands	Lat 40 49 15 Long 73 53 55	1	ebb	18.0	89	2,000
1105	1.59		Lat 40 47 15 Long 73 53 55	40	"	19.0	89	1,400

Ex. 98, P. 129

Number of Bacteria in the Water. Harlem River. October 1, 1909.
 Low water occurred at Governors Island at 4.05 p.m. The wind was northwest with a
 velocity of 40 miles per hour.

Sample No.	Hour p.m.	Location of Samples		Exact O.	Feet below surface	Tidal cur- rent	Temp. water deg. C.	Percent No. of land bacteria water
		Approximate						
1106	2.13	Midstream, off East 116 St.		Lat 40 47 35 Long 73 56 50	1	Ebb	18.5	28 10,000
1107	2.15	"		Lat 40 47 35 Long 73 55 50	20	"	18.5	28 7,200
1108	2.25	Midstream, off East 110 St.		Lat 40 47 20 Long 73 56 05	1	"	18.5	28 12,000
1109	2.27	"		Lat 40 47 20 Long 73 56 05	20	"	18.5	29 6,800

Ex. 95. P. 110

Number of Bacteria in the Water. East River. October 1, 1909.
 Low water occurred at Governors Island at 4.05 P.M. The wind
 was northwest with a velocity of 40 miles per hour.

Sample No. Hour P.M.	Location of Samples approximate	Exact	Feet below surface	Tidal current	Temp. water deg. C.	Percent		No. of bacteria per c.c.
						land	water	
1110	2.35 Hell Gate, off East 90 St.	Lat 40 46 40	1	Ebb	18.0	28		5,500
		Long 73 56 20						
1111	2.36 "	Lat 40 46 40	20	"	18.0	28		4,800
		Long 73 56 20						
1112	2.38 "	Lat 40 46 40	40	"	18.0	28		3,000
		Long 73 56 20						
1113	2.47 At Queensboro bridge, west channel	Lat 40 45 25	1	"	18.0	28		4,800
		Long 73 57 30						
1114	2.50 "	Lat 40 45 25	40	"	18.0	28		3,600
		Long 73 57 30						
1115	3.08 1000 feet off mouth of New- ton Creek	Lat 40 44 10	1	"	18.5	28		9,000
		Long 73 57 55						
1116	3.10 "	Lat 40 44 10	30	"	18.0	28		6,600
		Long 73 57 55						
1117	3.28 1000 feet off Wallabout Bay	Lat 40 42 25	1	"	18.5	28		9,600
		Long 73 58 30						
1118	3.30 "	Lat 40 42 25	20	"	18.0	28		7,000
		Long 73 58 30						
1119	3.32 "	Lat 40 42 25	40	"	18.0	28		4,800
		Long 73 58 30						

Ex. 95. 2. 111

October 2, 1909.

Number of Bacteria in the Water. East River.

High water occurred at Governors Island at 10.17 a.m. The wind was west with a velocity of 20 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. water deg. C	Percent land water	No. of bacteria per c.c.
		Approximate	Exact " "				
1120	9.20	500 feet off Pier 4, Manhat-	Lat 40 42 00 Long 74 00 40	Flood	17.0	28	5,100
1121	9.21	" " " "	Lat 40 42 00 Long 74 00 40	"	17.0	28	4,200
1122	9.23	" " " "	Lat 40 42 00 Long 74 00 40	"	17.0	28	3,800
1123	9.35	At Brooklyn Bridge, 500 feet	Lat 40 42 25 Long 73 59 55	"	17.0	28	5,400
1124	9.37	" " " "	Lat 40 42 25 Long 73 59 55	"	17.0	28	3,800
1125	9.50	At Williamsburg bridge, 500	Lat 40 42 50 Long 73 58 30	"	17.0	28	4,800
1126	9.52	" " " "	Lat 40 42 50 Long 73 58 30	"	17.0	28	5,200
1127	9.55	" " " "	Lat 40 42 50 Long 73 58 30	"	17.0	28	3,700
1128	10.15	Opposite East 34 St. 500 feet	Lat 40 44 30 Long 73 58 15	"	17.0	28	6,400
1129	10.18	" " " "	Lat 40 44 30 Long 73 58 15	"	17.0	28	4,900
1130	10.30	At Queensboro bridge, west	Lat 40 45 25 Long 73 57 30	"	17.0	28	5,800
1131	10.31	" " " "	Lat 40 45 25 Long 73 57 30	"	17.0	28	5,800
1132	10.33	" " " "	Lat 40 45 25 Long 73 57 30	"	17.0	28	4,100

Ex. 95. P. 112

Number of Bacteria in the Water. East River. October 2, 1893.
(Continued)

Sample No.	Hour a.m.	Location of Samples		Feet below surface	Tidal gauge	Temp. water deg. C.	Percent lead water	No. of bacteria per c.c.
		Approximate	Exact					
1133	10.40	Hell Gate, off East 90 St.	Lat 40 46 30 Long 73 56 20	1	Flood	17.0	28	4,800
1134	10.41	"	Lat 40 46 30 Long 73 56 20	20	"	17.0	28	4,000
1135	10.43	"	Lat 40 46 30 Long 73 56 20	40	"	17.0	29	3,600

Ex. 98. P. 113

October 8, 1939.

Hudson River.

Number of Bacteria in the Water.

High water occurred at Governors Island at 1.00 p.m. The wind was northeast, with a velocity

of 10 miles per hour.

Sample No.	Hour a.m.	Location of Samples		Tidal current	Temp. water and air Deg. C	Percent Bacteria per C.C.
		Approximate	Exact, " "			
1136	10.55	1/8 way across from foot of West 42 St.	Lat 40 48 50 Long 74 00 20	Flood	17.0	2,800
1137	10.56	"	Lat 40 48 50 Long 74 00 20	Flood	17.0	2,800
1138	10.57	"	Lat 40 48 50 Long 74 00 20	Flood	17.0	2,100
1139	11.08	2/8 way across from foot of West 42 St.	Lat 40 48 50 Long 74 00 30	Flood	17.0	2,800
1140	11.07	"	Lat 40 48 50 Long 74 00 30	Flood	17.0	2,800
1141	11.09	"	Lat 40 48 50 Long 74 00 30	Flood	17.0	1,600
1142	11.15	3/4 way across from foot of West 42 St.	Lat 40 46 00 Long 74 00 50	Flood	17.0	2,000
1143	11.17	"	Lat 40 46 00 Long 74 00 50	Flood	17.0	1,700
1144	11.19	"	Lat 40 46 00 Long 74 00 50	Flood	17.0	1,200
1145	12.15	1/8 way across from foot of West 137 St.	Lat 40 49 30 Long 73 57 36	Flood	17.0	2,500
1146	12.16	"	Lat 40 49 30 Long 73 57 36	Flood	17.0	2,000
1147	12.18	"	Lat 40 49 30 Long 73 57 36	Flood	17.0	2,400
1148	12.28	2/8 way across from foot of West 137 St.	Lat 40 49 30 Long 73 57 36	Flood	17.0	2,800

Ex. 96, P. 114

Number of Bacteria in the Water, Hudson River, October 8, 1909. (Continued.)

Sample No.	Hour p.m.	Location of Sample		Tidal current	Temp. water, deg. C.	Percent land bacteria per C.C.
		Approximate	Exact			
1149	12.09	1/8 way across from feet of West	Lat 40 49 20 Long 73 57 50	Flood	17.0	1,800
1150	12.30	" " " "	Lat 40 49 30 Long 73 57 50	Flood	17.0	1,000
1151	12.40	3/4 " " " "	Lat 40 49 40 Long 73 58 05	Flood	17.0	1,700
1152	12.41	" " " "	Lat 40 49 40 Long 73 58 05	Flood	17.0	1,800
1153	12.45	" " " "	Lat 40 49 40 Long 73 58 05	Flood	17.0	900
1154	1.00	5/10 feet off inroad	Lat 40 49 50 Long 73 58 10	Flood	17.0	1,600
1155	1.21	500 feet off inroad	Lat 40 50 20 Long 73 58 25	Flood	17.0	1,800
1156	1.25	500 feet off inroad	Lat 40 50 30 Long 73 58 35	Flood	17.0	900
1157	1.33	1/3 way across from inroad	Lat 40 50 35 Long 73 58 40	Flood	17.0	1,800
1158	1.34	" " " "	Lat 40 50 35 Long 73 58 40	Flood	17.0	1,800
1159	1.36	" " " "	Lat 40 50 35 Long 73 58 40	Flood	17.0	900
1160	1.46	3/4 way across from inroad	Lat 40 50 35 Long 73 58 40	Flood	17.0	1,400
1161	1.47	" " " "	Lat 40 50 35 Long 73 58 40	Flood	17.0	1,600
1162	1.49	" " " "	Lat 40 50 35 Long 73 58 40	Flood	17.0	700

Ex. 96, P. 319

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 96.

JAMES D. MAHER,
Commissioner.

Average Number of Bacteria in Water in the year 1909.
Summary of Tables 1 to 7, including 1100 Analyses

Location	At Depth and Side		Surface		Bottoms		Elk-		Flood	
	No. of analyses	Bacteria per c.c.	No. of analyses	Bacteria per c.c.	No. of analyses	Bacteria per c.c.	No. of analyses	Bacteria per c.c.	No. of analyses	Bacteria per c.c.
Upper bay	113	12,500	62	14,400	42	10,300	79	13,800	31	9,300
Hudson river	192	6,600	71	8,400	63	4,800	94	8,100	81	5,700
Yellow Station Canal	53	5,100	15	6,300	15	4,400	35	5,200	10	4,700
Hudson river Canal	119	6,100	41	7,100	41	4,500	55	6,700	61	5,600
East river	37	3,100	15	3,300	15	2,400	17	1,800	24	4,200
East river at Fort Mifflin	58	15,600	28	22,800	18	8,000	31	16,200	27	10,000
Hudson river	40	310	19	410	14	190	17	390	23	260
Long Island Sound	80	6,500	30	8,100	28	5,000	49	6,900	31	6,000
Hill van Kull	45	7,400	19	9,000	14	6,300	21	9,000	24	6,000
Manhasset bay	8	92,000	4	111,000	4	75,000	4	121,000	4	65,000
Purchase river at Newk	24	5,000	11	5,500	10	4,400	14	7,300	7	350
Cothran Kill	55	4,900	17	8,300	14	—	31	6,700	24	2,700
She Mammus	16	4,300	8	4,300	—	—	—	—	8	4,300
Greenwich bay	256	1,600	110	2,100	94	1,100	134	1,600	117	1,500
Lower bay	39	8,400	19	9,900	—	—	14	9,800	10	6,400
Jamaica bay	8	2,900	7	2,300	—	—	5	4,000	3	1,200
Rockaway inlet	4	120	2	200	2	35	—	—	4	120

Compliments Exhibit No. 2 P. James D. Mahon Commissioner

Average Number of Bacteria in Water in the year 1909.
without deductions as to depth or site

Location	Number of analyses	Position per C.C.	Samples included in the Average
Manhwy	45	7,400	361-377, 335-349, 815-821, 934-944.
Basin river at Newark	8	92,000	327-330, 809-810, 933-934.
Arthur Kill	24	5,000	903-968, 971-975, 1031-1044 1963 and 964 taken at same place, and full as not included (not in list)
The Narrows	55	41,900	85-108, 106-126, 400-406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1002, 1004, 1006, 1008, 1010, 1012, 1014, 1016, 1018, 1020, 1022, 1024, 1026, 1028, 1030, 1032, 1034, 1036, 1038, 1040, 1042, 1044, 1046, 1048, 1050, 1052, 1054, 1056, 1058, 1060, 1062, 1064, 1066, 1068, 1070, 1072, 1074, 1076, 1078, 1080, 1082, 1084, 1086, 1088, 1090, 1092, 1094, 1096, 1098, 1100, 1102, 1104, 1106, 1108, 1110, 1112, 1114, 1116, 1118, 1120, 1122, 1124, 1126, 1128, 1130, 1132, 1134, 1136, 1138, 1140, 1142, 1144, 1146, 1148, 1150, 1152, 1154, 1156, 1158, 1160, 1162, 1164, 1166, 1168, 1170, 1172, 1174, 1176, 1178, 1180, 1182, 1184, 1186, 1188, 1190, 1192, 1194, 1196, 1198, 1200, 1202, 1204, 1206, 1208, 1210, 1212, 1214, 1216, 1218, 1220, 1222, 1224, 1226, 1228, 1230, 1232, 1234, 1236, 1238, 1240, 1242, 1244, 1246, 1248, 1250, 1252, 1254, 1256, 1258, 1260, 1262, 1264, 1266, 1268, 1270, 1272, 1274, 1276, 1278, 1280, 1282, 1284, 1286, 1288, 1290, 1292, 1294, 1296, 1298, 1300, 1302, 1304, 1306, 1308, 1310, 1312, 1314, 1316, 1318, 1320, 1322, 1324, 1326, 1328, 1330, 1332, 1334, 1336, 1338, 1340, 1342, 1344, 1346, 1348, 1350, 1352, 1354, 1356, 1358, 1360, 1362, 1364, 1366, 1368, 1370, 1372, 1374, 1376, 1378, 1380, 1382, 1384, 1386, 1388, 1390, 1392, 1394, 1396, 1398, 1400, 1402, 1404, 1406, 1408, 1410, 1412, 1414, 1416, 1418, 1420, 1422, 1424, 1426, 1428, 1430, 1432, 1434, 1436, 1438, 1440, 1442, 1444, 1446, 1448, 1450, 1452, 1454, 1456, 1458, 1460, 1462, 1464, 1466, 1468, 1470, 1472, 1474, 1476, 1478, 1480, 1482, 1484, 1486, 1488, 1490, 1492, 1494, 1496, 1498, 1500, 1502, 1504, 1506, 1508, 1510, 1512, 1514, 1516, 1518, 1520, 1522, 1524, 1526, 1528, 1530, 1532, 1534, 1536, 1538, 1540, 1542, 1544, 1546, 1548, 1550, 1552, 1554, 1556, 1558, 1560, 1562, 1564, 1566, 1568, 1570, 1572, 1574, 1576, 1578, 1580, 1582, 1584, 1586, 1588, 1590, 1592, 1594, 1596, 1598, 1600, 1602, 1604, 1606, 1608, 1610, 1612, 1614, 1616, 1618, 1620, 1622, 1624, 1626, 1628, 1630, 1632, 1634, 1636, 1638, 1640, 1642, 1644, 1646, 1648, 1650, 1652, 1654, 1656, 1658, 1660, 1662, 1664, 1666, 1668, 1670, 1672, 1674, 1676, 1678, 1680, 1682, 1684, 1686, 1688, 1690, 1692, 1694, 1696, 1698, 1700, 1702, 1704, 1706, 1708, 1710, 1712, 1714, 1716, 1718, 1720, 1722, 1724, 1726, 1728, 1730, 1732, 1734, 1736, 1738, 1740, 1742, 1744, 1746, 1748, 1750, 1752, 1754, 1756, 1758, 1760, 1762, 1764, 1766, 1768, 1770, 1772, 1774, 1776, 1778, 1780, 1782, 1784, 1786, 1788, 1790, 1792, 1794, 1796, 1798, 1800, 1802, 1804, 1806, 1808, 1810, 1812, 1814, 1816, 1818, 1820, 1822, 1824, 1826, 1828, 1830, 1832, 1834, 1836, 1838, 1840, 1842, 1844, 1846, 1848, 1850, 1852, 1854, 1856, 1858, 1860, 1862, 1864, 1866, 1868, 1870, 1872, 1874, 1876, 1878, 1880, 1882, 1884, 1886, 1888, 1890, 1892, 1894, 1896, 1898, 1900, 1902, 1904, 1906, 1908, 1910, 1912, 1914, 1916, 1918, 1920, 1922, 1924, 1926, 1928, 1930, 1932, 1934, 1936, 1938, 1940, 1942, 1944, 1946, 1948, 1950, 1952, 1954, 1956, 1958, 1960, 1962, 1964, 1966, 1968, 1970, 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022, 2024, 2026, 2028, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048, 2050, 2052, 2054, 2056, 2058, 2060, 2062, 2064, 2066, 2068, 2070, 2072, 2074, 2076, 2078, 2080, 2082, 2084, 2086, 2088, 2090, 2092, 2094, 2096, 2098, 2100, 2102, 2104, 2106, 2108, 2110, 2112, 2114, 2116, 2118, 2120, 2122, 2124, 2126, 2128, 2130, 2132, 2134, 2136, 2138, 2140, 2142, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160, 2162, 2164, 2166, 2168, 2170, 2172, 2174, 2176, 2178, 2180, 2182, 2184, 2186, 2188, 2190, 2192, 2194, 2196, 2198, 2200, 2202, 2204, 2206, 2208, 2210, 2212, 2214, 2216, 2218, 2220, 2222, 2224, 2226, 2228, 2230, 2232, 2234, 2236, 2238, 2240, 2242, 2244, 2246, 2248, 2250, 2252, 2254, 2256, 2258, 2260, 2262, 2264, 2266, 2268, 2270, 2272, 2274, 2276, 2278, 2280, 2282, 2284, 2286, 2288, 2290, 2292, 2294, 2296, 2298, 2300, 2302, 2304, 2306, 2308, 2310, 2312, 2314, 2316, 2318, 2320, 2322, 2324, 2326, 2328, 2330, 2332, 2334, 2336, 2338, 2340, 2342, 2344, 2346, 2348, 2350, 2352, 2354, 2356, 2358, 2360, 2362, 2364, 2366, 2368, 2370, 2372, 2374, 2376, 2378, 2380, 2382, 2384, 2386, 2388, 2390, 2392, 2394, 2396, 2398, 2400, 2402, 2404, 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2420, 2422, 2424, 2426, 2428, 2430, 2432, 2434, 2436, 2438, 2440, 2442, 2444, 2446, 2448, 2450, 2452, 2454, 2456, 2458, 2460, 2462, 2464, 2466, 2468, 2470, 2472, 2474, 2476, 2478, 2480, 2482, 2484, 2486, 2488, 2490, 2492, 2494, 2496, 2498, 2500, 2502, 2504, 2506, 2508, 2510, 2512, 2514, 2516, 2518, 2520, 2522, 2524, 2526, 2528, 2530, 2532, 2534, 2536, 2538, 2540, 2542, 2544, 2546, 2548, 2550, 2552, 2554, 2556, 2558, 2560, 2562, 2564, 2566, 2568, 2570, 2572, 2574, 2576, 2578, 2580, 2582, 2584, 2586, 2588, 2590, 2592, 2594, 2596, 2598, 2600, 2602, 2604, 2606, 2608, 2610, 2612, 2614, 2616, 2618, 2620, 2622, 2624, 2626, 2628, 2630, 2632, 2634, 2636, 2638, 2640, 2642, 2644, 2646, 2648, 2650, 2652, 2654, 2656, 2658, 2660, 2662, 2664, 2666, 2668, 2670, 2672, 2674, 2676, 2678, 2680, 2682, 2684, 2686, 2688, 2690, 2692, 2694, 2696, 2698, 2700, 2702, 2704, 2706, 2708, 2710, 2712, 2714, 2716, 2718, 2720, 2722, 2724, 2726, 2728, 2730, 2732, 2734, 2736, 2738, 2740, 2742, 2744, 2746, 2748, 2750, 2752, 2754, 2756, 2758, 2760, 2762, 2764, 2766, 2768, 2770, 2772, 2774, 2776, 2778, 2780, 2782, 2784, 2786, 2788, 2790, 2792, 2794, 2796, 2798, 2800, 2802, 2804, 2806, 2808, 2810, 2812, 2814, 2816, 2818, 2820, 2822, 2824, 2826, 2828, 2830, 2832, 2834, 2836, 2838, 2840, 2842, 2844, 2846, 2848, 2850, 2852, 2854, 2856, 2858, 2860, 2862, 2864, 2866, 2868, 2870, 2872, 2874, 2876, 2878, 2880, 2882, 2884, 2886, 2888, 2890, 2892, 2894, 2896, 2898, 2900, 2902, 2904, 2906, 2908, 2910, 2912, 2914, 2916, 2918, 2920, 2922, 2924, 2926, 2928, 2930, 2932, 2934, 2936, 2938, 2940, 2942, 2944, 2946, 2948, 2950, 2952, 2954, 2956, 2958, 2960, 2962, 2964, 2966, 2968, 2970, 2972, 2974, 2976, 2978, 2980, 2982, 2984, 2986, 2988, 2990, 2992, 2994, 2996, 2998, 3000, 3002, 3004, 3006, 3008, 3010, 3012, 3014, 3016, 3018, 3020, 3022, 3024, 3026, 3028, 3030, 3032, 3034, 3036, 3038, 3040, 3042, 3044, 3046, 3048, 3050, 3052, 3054, 3056, 3058, 3060, 3062, 3064, 3066, 3068, 3070, 3072, 3074, 3076, 3078, 3080, 3082, 3084, 3086, 3088, 3090, 3092, 3094, 3096, 3098, 3100, 3102, 3104, 3106, 3108, 3110, 3112, 3114, 3116, 3118, 3120, 3122, 3124, 3126, 3128, 3130, 3132, 3134, 3136, 3138, 3140, 3142, 3144, 3146, 3148, 3150, 3152, 3154, 3156, 3158, 3160, 3162, 3164, 3166, 3168, 3170, 3172, 3174, 3176, 3178, 3180, 3182, 3184, 3186, 3188, 3190, 3192, 3194, 3196, 3198, 3200, 3202, 3204, 3206, 3208, 3210, 3212, 3214, 3216, 3218, 3220, 3222, 3224, 3226, 3228, 3230, 3232, 3234, 3236, 3238, 3240, 3242, 3244, 3246, 3248, 3250, 3252, 3254, 3256, 3258, 3260, 3262, 3264, 3266, 3268, 3270, 3272, 3274, 3276, 3278, 3280, 3282, 3284, 3286, 3288, 3290, 3292, 3294, 3296, 3298, 3300, 3302, 3304, 3306, 3308, 3310, 3312, 3314, 3316, 3318, 3320, 3322, 3324, 3326, 3328, 3330, 3332, 3334, 3336, 3338, 3340, 3342, 3344, 3346, 3348, 3350, 3352, 3354, 3356, 3358, 3360, 3362, 3364, 3366, 3368, 3370, 3372, 3374, 3376, 3378, 3380, 3382, 3384, 3386, 3388, 3390, 3392, 3394, 3396, 3398, 3400, 3402, 3404, 3406, 3408, 3410, 3412, 3414, 3416, 3418, 3420, 3422, 3424, 3426, 3428, 3430, 3432, 3434, 3436, 3438, 3440, 3442, 3444, 3446, 3448, 3450, 3452, 3454, 3456, 3458, 3460, 3462, 3464, 3466, 3468, 3470, 3472, 3474, 3476, 3478, 3480, 3482, 3484, 3486, 3488, 3490, 3492, 3494, 3496, 3498, 3500, 3502, 3504, 3506, 3508, 3510, 3512, 3514, 3516, 3518, 3520, 3522, 3524, 3526, 3528, 3530, 3532, 3534, 3536, 3538, 3540, 3542, 3544, 3546, 3548, 3550, 3552, 3554, 3556, 3558, 3560, 3562, 3564, 3566, 3568, 3570, 3572, 3574, 3576, 3578, 3580, 3582, 3584, 3586, 3588, 3590, 3592, 3594, 3596, 3598, 3600, 3602, 3604, 3606, 3608, 3610, 3612, 3614, 3616, 3618, 3620, 3622, 3624, 3626, 3628, 3630, 3632, 3634, 3636, 3638, 3640, 3642, 3644, 3646, 3648, 3650, 3652, 3654, 3656, 3658, 3660, 3662, 3664, 3666, 3668, 3670, 3672, 3674, 3676, 3678, 3680, 3682, 3684, 3686, 3688, 3690, 3692, 3694, 3696, 3698, 3700, 3702, 3704, 3706, 3708, 3710, 3712, 3714, 3716, 3718, 3720, 3722, 3724, 3726, 3728, 3730, 3732, 3734, 3736, 3738, 3740, 3742, 3744, 3746, 3748, 3750, 3752, 3754, 3756, 3758, 3760, 3762, 3764, 3766, 3768, 3770, 3772, 3774, 3776, 3778, 3780, 3782, 3784, 3786, 3788, 3790, 3792, 3794, 3796, 3798, 3800, 3802, 3804, 3806, 3808, 3810, 3812, 3814, 3816, 3818, 3820, 3822, 3824, 3826, 3828, 3830, 3832, 3834, 3836, 3838, 3840, 3842, 3844, 3846, 3848, 3850, 3852, 3854, 3856, 3858, 3860, 3862, 3864, 3866, 3868, 3870, 3872, 3874, 3876, 3878, 3880, 3882, 3884, 3886, 3888, 3890, 3892, 3894, 3896, 3898, 3900, 3902, 3904, 3906, 3908, 3910, 3912, 3914, 3916, 3918, 3920, 3922, 3924, 3926, 3928, 3930, 3932, 3934, 3936, 3938, 3940, 3942, 3944, 3946, 3948, 3950, 3952, 3954, 3956, 3958, 3960, 3962, 3964, 3966, 3968, 3970, 3972, 3974, 3976, 3978, 3980, 3982, 3984, 3986, 3988, 3990, 3992, 3994, 3996, 3998, 4000, 4002, 4004, 4006, 4008, 4010, 4012, 4014, 4016, 4018, 4020, 4022, 4024, 4026, 4028, 4030, 4032, 4034, 4036, 4038, 4040, 4042, 4044, 4046, 4048, 4050, 4052, 4054, 4056, 4058, 4060, 4062, 4064, 4066, 4068, 4070, 4072, 4074, 4076, 4078, 4080, 4082, 4084, 4086, 4088, 4090, 4092, 4094, 4096, 4098, 4100, 4102, 4104, 4106, 4108, 4110, 4112, 4114, 4116, 4118, 4120, 4122, 4124, 4126, 4128, 4130, 4132, 4134, 4136, 4138, 4140, 4142, 4144, 4146, 4148, 4150, 4152, 4154, 4156, 4158, 4160, 4162, 4164, 4166, 4168, 4170, 4172, 4174, 4176, 4178, 4180, 4182, 4184, 4186, 4188, 4190, 4192, 4194, 4196, 4198, 4200, 4202, 4204, 4206, 4208, 4210, 4212, 4214, 4216, 4218, 4220, 4222, 4224, 4226, 4228, 4230, 4232, 4234, 4236, 4238, 4240, 4242, 4244, 4246, 4248, 4250, 4252, 4254, 4256, 4258, 4260, 4262, 4264, 4266, 4268, 4270, 4272, 4274, 4276, 4278, 4280, 4282, 4284, 4286, 4288, 4290, 4292, 4294, 4296, 4298, 4300, 4302, 4304, 4306, 4308, 4310, 4312, 4314, 4316, 4318, 4320, 4322, 4324, 4326, 4328, 4330, 4332, 4334, 4336, 4338, 4340, 4342, 4344, 4346, 4348, 4350, 4352, 4354, 4356, 4358, 4360, 4362, 4364, 4366, 4368, 4370, 4372, 4374, 4376, 4378, 4380, 4382, 4384, 4386, 4388, 4390, 4392, 4394, 4396, 4398, 4400, 4402, 4404, 4406, 4408, 4410, 4412, 4414, 4416, 4418, 4420, 4422, 4424, 4426, 4428, 4430, 4432, 4434, 4436, 4438, 4440, 4442, 4444, 4446, 4448, 4450, 4452, 4454, 4456, 4458, 4460, 4462, 4464, 4466

Average Number of Bacteria in Water in the year 1909
Average for Surface and Bottom Samples

Location	Surface		Depth	
	No. of Bacteria analyzed per c.c.	Samples included in the average	No. of Bacteria analyzed per c.c.	Samples included in the average
Upper bay	620	14,600 1,385,793,11,13,15,17,19,21,23,25, 27,29,31,33,35,47,50,52,54,56, 58,60,62,64,66,68,70,72,74,76, 78,80,82,84,86,88,90,92,94,96, 98,100,102,104,106,108,110,112, 114,116,118,120,122,124,126, 128,130,132,134,136,138,140, 142,144,146,148,150,152,154, 156,158,160,162,164,166,168, 170,172,174,176,178,180,182, 184,186,188,190,192,194,196, 198,200,202,204,206,208,210, 212,214,216,218,220,222,224, 226,228,230,232,234,236,238, 240,242,244,246,248,250,252, 254,256,258,260,262,264,266, 268,270,272,274,276,278,280, 282,284,286,288,290,292,294, 296,298,300,302,304,306,308, 310,312,314,316,318,320,322, 324,326,328,330,332,334,336, 338,340,342,344,346,348,350, 352,354,356,358,360,362,364, 366,368,370,372,374,376,378, 380,382,384,386,388,390,392, 394,396,398,400,402,404,406, 408,410,412,414,416,418,420, 422,424,426,428,430,432,434, 436,438,440,442,444,446,448, 450,452,454,456,458,460,462, 464,466,468,470,472,474,476, 478,480,482,484,486,488,490, 492,494,496,498,500,502,504, 506,508,510,512,514,516,518, 520,522,524,526,528,530,532, 534,536,538,540,542,544,546, 548,550,552,554,556,558,560, 562,564,566,568,570,572,574, 576,578,580,582,584,586,588, 590,592,594,596,598,600,602, 604,606,608,610,612,614,616, 618,620,622,624,626,628,630, 632,634,636,638,640,642,644, 646,648,650,652,654,656,658, 660,662,664,666,668,670,672, 674,676,678,680,682,684,686, 688,690,692,694,696,698,700, 702,704,706,708,710,712,714, 716,718,720,722,724,726,728, 730,732,734,736,738,740,742, 744,746,748,750,752,754,756, 758,760,762,764,766,768,770, 772,774,776,778,780,782,784, 786,788,790,792,794,796,798, 800,802,804,806,808,810,812, 814,816,818,820,822,824,826, 828,830,832,834,836,838,840, 842,844,846,848,850,852,854, 856,858,860,862,864,866,868, 870,872,874,876,878,880,882, 884,886,888,890,892,894,896, 898,900,902,904,906,908,910, 912,914,916,918,920,922,924, 926,928,930,932,934,936,938, 940,942,944,946,948,950,952, 954,956,958,960,962,964,966, 968,970,972,974,976,978,980, 982,984,986,988,990,992,994, 996,998,1000,1002,1004,1006, 1008,1010,1012,1014,1016,1018, 1020,1022,1024,1026,1028,1030, 1032,1034,1036,1038,1040,1042, 1044,1046,1048,1050,1052,1054, 1056,1058,1060,1062,1064,1066, 1068,1070,1072,1074,1076,1078, 1080,1082,1084,1086,1088,1090, 1092,1094,1096,1098,1100,1102, 1104,1106,1108,1110,1112,1114, 1116,1118,1120,1122,1124,1126, 1128,1130,1132,1134,1136,1138, 1140,1142,1144,1146,1148,1150, 1152,1154,1156,1158,1160,1162, 1164,1166,1168,1170,1172,1174, 1176,1178,1180,1182,1184,1186, 1188,1190,1192,1194,1196,1198, 1200,1202,1204,1206,1208,1210, 1212,1214,1216,1218,1220,1222, 1224,1226,1228,1230,1232,1234, 1236,1238,1240,1242,1244,1246, 1248,1250,1252,1254,1256,1258, 1260,1262,1264,1266,1268,1270, 1272,1274,1276,1278,1280,1282, 1284,1286,1288,1290,1292,1294, 1296,1298,1300,1302,1304,1306, 1308,1310,1312,1314,1316,1318, 1320,1322,1324,1326,1328,1330, 1332,1334,1336,1338,1340,1342, 1344,1346,1348,1350,1352,1354, 1356,1358,1360,1362,1364,1366, 1368,1370,1372,1374,1376,1378, 1380,1382,1384,1386,1388,1390, 1392,1394,1396,1398,1400,1402, 1404,1406,1408,1410,1412,1414, 1416,1418,1420,1422,1424,1426, 1428,1430,1432,1434,1436,1438, 1440,1442,1444,1446,1448,1450, 1452,1454,1456,1458,1460,1462, 1464,1466,1468,1470,1472,1474, 1476,1478,1480,1482,1484,1486, 1488,1490,1492,1494,1496,1498, 1500,1502,1504,1506,1508,1510, 1512,1514,1516,1518,1520,1522, 1524,1526,1528,1530,1532,1534, 1536,1538,1540,1542,1544,1546, 1548,1550,1552,1554,1556,1558, 1560,1562,1564,1566,1568,1570, 1572,1574,1576,1578,1580,1582, 1584,1586,1588,1590,1592,1594, 1596,1598,1600,1602,1604,1606, 1608,1610,1612,1614,1616,1618, 1620,1622,1624,1626,1628,1630, 1632,1634,1636,1638,1640,1642, 1644,1646,1648,1650,1652,1654, 1656,1658,1660,1662,1664,1666, 1668,1670,1672,1674,1676,1678, 1680,1682,1684,1686,1688,1690, 1692,1694,1696,1698,1700,1702, 1704,1706,1708,1710,1712,1714, 1716,1718,1720,1722,1724,1726, 1728,1730,1732,1734,1736,1738, 1740,1742,1744,1746,1748,1750, 1752,1754,1756,1758,1760,1762, 1764,1766,1768,1770,1772,1774, 1776,1778,1780,1782,1784,1786, 1788,1790,1792,1794,1796,1798, 1800,1802,1804,1806,1808,1810, 1812,1814,1816,1818,1820,1822, 1824,1826,1828,1830,1832,1834, 1836,1838,1840,1842,1844,1846, 1848,1850,1852,1854,1856,1858, 1860,1862,1864,1866,1868,1870, 1872,1874,1876,1878,1880,1882, 1884,1886,1888,1890,1892,1894, 1896,1898,1900,1902,1904,1906, 1908,1910,1912,1914,1916,1918, 1920,1922,1924,1926,1928,1930, 1932,1934,1936,1938,1940,1942, 1944,1946,1948,1950,1952,1954, 1956,1958,1960,1962,1964,1966, 1968,1970,1972,1974,1976,1978, 1980,1982,1984,1986,1988,1990, 1992,1994,1996,1998,2000,2002, 2004,2006,2008,2010,2012,2014, 2016,2018,2020,2022,2024,2026, 2028,2030,2032,2034,2036,2038, 2040,2042,2044,2046,2048,2050, 2052,2054,2056,2058,2060,2062, 2064,2066,2068,2070,2072,2074, 2076,2078,2080,2082,2084,2086, 2088,2090,2092,2094,2096,2098, 2100,2102,2104,2106,2108,2110, 2112,2114,2116,2118,2120,2122, 2124,2126,2128,2130,2132,2134, 2136,2138,2140,2142,2144,2146, 2148,2150,2152,2154,2156,2158, 2160,2162,2164,2166,2168,2170, 2172,2174,2176,2178,2180,2182, 2184,2186,2188,2190,2192,2194, 2196,2198,2200,2202,2204,2206, 2208,2210,2212,2214,2216,2218, 2220,2222,2224,2226,2228,2230, 2232,2234,2236,2238,2240,2242, 2244,2246,2248,2250,2252,2254, 2256,2258,2260,2262,2264,2266, 2268,2270,2272,2274,2276,2278, 2280,2282,2284,2286,2288,2290, 2292,2294,2296,2298,2300,2302, 2304,2306,2308,2310,2312,2314, 2316,2318,2320,2322,2324,2326, 2328,2330,2332,2334,2336,2338, 2340,2342,2344,2346,2348,2350, 2352,2354,2356,2358,2360,2362, 2364,2366,2368,2370,2372,2374, 2376,2378,2380,2382,2384,2386, 2388,2390,2392,2394,2396,2398, 2400,2402,2404,2406,2408,2410, 2412,2414,2416,2418,2420,2422, 2424,2426,2428,2430,2432,2434, 2436,2438,2440,2442,2444,2446, 2448,2450,2452,2454,2456,2458, 2460,2462,2464,2466,2468,2470, 2472,2474,2476,2478,2480,2482, 2484,2486,2488,2490,2492,2494, 2496,2498,2500,2502,2504,2506, 2508,2510,2512,2514,2516,2518, 2520,2522,2524,2526,2528,2530, 2532,2534,2536,2538,2540,2542, 2544,2546,2548,2550,2552,2554, 2556,2558,2560,2562,2564,2566, 2568,2570,2572,2574,2576,2578, 2580,2582,2584,2586,2588,2590, 2592,2594,2596,2598,2600,2602, 2604,2606,2608,2610,2612,2614, 2616,2618,2620,2622,2624,2626, 2628,2630,2632,2634,2636,2638, 2640,2642,2644,2646,2648,2650, 2652,2654,2656,2658,2660,2662, 2664,2666,2668,2670,2672,2674, 2676,2678,2680,2682,2684,2686, 2688,2690,2692,2694,2696,2698, 2700,2702,2704,2706,2708,2710, 2712,2714,2716,2718,2720,2722, 2724,2726,2728,2730,2732,2734, 2736,2738,2740,2742,2744,2746, 2748,2750,2752,2754,2756,2758, 2760,2762,2764,2766,2768,2770, 2772,2774,2776,2778,2780,2782, 2784,2786,2788,2790,2792,2794, 2796,2798,2800,2802,2804,2806, 2808,2810,2812,2814,2816,2818, 2820,2822,2824,2826,2828,2830, 2832,2834,2836,2838,2840,2842, 2844,2846,2848,2850,2852,2854, 2856,2858,2860,2862,2864,2866, 2868,2870,2872,2874,2876,2878, 2880,2882,2884,2886,2888,2890, 2892,2894,2896,2898,2900,2902, 2904,2906,2908,2910,2912,2914, 2916,2918,2920,2922,2924,2926, 2928,2930,2932,2934,2936,2938, 2940,2942,2944,2946,2948,2950, 2952,2954,2956,2958,2960,2962, 2964,2966,2968,2970,2972,2974, 2976,2978,2980,2982,2984,2986, 2988,2990,2992,2994,2996,2998, 3000,3002,3004,3006,3008,3010, 3012,3014,3016,3018,3020,3022, 3024,3026,3028,3030,3032,3034, 3036,3038,3040,3042,3044,3046, 3048,3050,3052,3054,3056,3058, 3060,3062,3064,3066,3068,3070, 3072,3074,3076,3078,3080,3082, 3084,3086,3088,3090,3092,3094, 3096,3098,3100,3102,3104,3106, 3108,3110,3112,3114,3116,3118, 3120,3122,3124,3126,3128,3130, 3132,3134,3136,3138,3140,3142, 3144,3146,3148,3150,3152,3154, 3156,3158,3160,3162,3164,3166, 3168,3170,3172,3174,3176,3178, 3180,3182,3184,3186,3188,3190, 3192,3194,3196,3198,3200,3202, 3204,3206,3208,3210,3212,3214, 3216,3218,3220,3222,3224,3226, 3228,3230,3232,3234,3236,3238, 3240,3242,3244,3246,3248,3250, 3252,3254,3256,3258,3260,3262, 3264,3266,3268,3270,3272,3274, 3276,3278,3280,3282,3284,3286, 3288,3290,3292,3294,3296,3298, 3300,3302,3304,3306,3308,3310, 3312,3314,3316,3318,3320,3322, 3324,3326,3328,3330,3332,3334, 3336,3338,3340,3342,3344,3346, 3348,3350,3352,3354,3356,3358, 3360,3362,3364,3366,3368,3370, 3372,3374,3376,3378,3380,3382, 3384,3386,3388,3390,3392,3394, 3396,3398,3400,3402,3404,3406, 3408,3410,3412,3414,3416,3418, 3420,3422,3424,3426,3428,3430, 3432,3434,3436,3438,3440,3442, 3444,3446,3448,3450,3452,3454, 3456,3458,3460,3462,3464,3466, 3468,3470,3472,3474,3476,3478, 3480,3482,3484,3486,3488,3490, 3492,3494,3496,3498,3500,3502, 3504,3506,3508,3510,3512,3514, 3516,3518,3520,3522,3524,3526, 3528,3530,3532,3534,3536,3538, 3540,3542,3544,3546,3548,3550, 3552,3554,3556,3558,3560,3562, 3564,3566,3568,3570,3572,3574, 3576,3578,3580,3582,3584,3586, 3588,3590,3592,3594,3596,3598, 3600,3602,3604,3606,3608,3610, 3612,3614,3616,3618,3620,3622, 3624,3626,3628,3630,3632,3634, 3636,3638,3640,3642,3644,3646, 3648,3650,3652,3654,3656,3658, 3660,3662,3664,3666,3668,3670, 3672,3674,3676,3678,3680,3682, 3684,3686,3688,3690,3692,3694, 3696,3698,3700,3702,3704,3706, 3708,3710,3712,3714,3716,3718, 3720,3722,3724,3726,3728,3730, 3732,3734,3736,3738,3740,3742, 3744,3746,3748,3750,3752,3754, 3756,3758,3760,3762,3764,3766, 3768,3770,3772,3774,3776,3778, 3780,3782,3784,3786,3788,3790, 3792,3794,3796,3798,3800,3802, 3804,3806,3808,3810,3812,3814, 3816,3818,3820,3822,3824,3826, 3828,3830,3832,3834,3836,3838, 3840,3842,3844,3846,3848,3850, 3852,3854,3856,3858,3860,3862, 3864,3866,3868,3870,3872,3874, 3876,3878,3880,3882,3884,3886, 3888,3890,3892,3894,3896,3898, 3900,3902,3904,3906,3908,3910, 3912,3914,3916,3918,3920,3922, 3924,3926,3928,3930,3932,3934, 3936,3938,3940,3942,3944,3946, 3948,3950,3952,3954,3956,3958, 3960,3962,3964,3966,3968,3970, 3972,3974,3976,3978,3980,3982, 3984,3986,3988,3990,3992,3994, 3996,3998,4000,4002,4004,4006, 4008,4010,4012,4014,4016,4018, 4020,4022,4024,4026,4028,4030, 4032,4034,4036,4038,4040,4042, 4044,4046,4048,4050,4052,4054, 4056,4058,4060,4062,4064,4066, 4068,4070,4072,4074,4076,4078, 4080,4082,4084,4086,4088,4090, 4092,4094,4096,4098,4100,4102, 4104,4106,4108,4110,4112,4114, 4116,4118,4120,4122,4124,4126, 4128,4130,4132,4134,4136,4138, 4140,4142,4144,4146,4148,4150, 4152,4154,4156,4158,4160,4162, 4164,4166,4168,4170,4172,4174, 4176,4178,4180,4182,4184,4186, 4188,4190,4192,4194,4196,4198, 4200,4202,4204,4206,4208,4210, 4212,4214,4216,4218,4220,4222, 4224,4226,4228,4230,4232,4234, 4236,4238,4240,4242,4244,4246, 4248,4250,4252,4254,4256,4258, 4260,4262,4264,4266,4268,4270, 4272,4274,4276,4278,4280,4282, 4284,4286,4288,4290,4292,4294, 4296,4298,4300,4302,4304,4306, 4308,4310,4312,4314,4316,4318, 4320,4322,4324,4326,4328,4330, 4332,4334,4336,4338,4340,4342, 4344,4346,4348,4350,4352,4354, 4356,4358,4360,4362,4364,4366, 4368,4370,4372,4374,4376,4378, 4380,4382,4384,4386,4388,4390, 4392,4394,4396,4398,4400,4402, 4404,4406,4408,4410,4412,4414, 4416,4418,4420,4422,4424,4426, 4428,4430,4432,4434,4436,4438, 4440,4442,4444,4446,4448,4450, 4452,4454,4456,4458,4460,4462, 4464,4466,4468,4470,4472,4474, 4476,4478,4480,4482,4484,4486, 4488,4490,4492,4494,4496,4498, 4500,4502,4504,4506,4508,4510, 4512,4514,4516,4518,4520,4522, 4524,4526,4528,4530,4532,4534, 4536,4538,4540,4542,4544,4546, 4548,4550,4552,4554,4556,4558, 4560,4562,4564,4566,4568,4570, 4572,4574,4576,4578,4580,4582, 4584,4586,4588,4590,4592,4594, 4596,4598,4600,4602,4604,4606, 4608,4610,4612,4614,4616,4618, 4620,4622,4624,4626,4628,4630, 4632,4634,4636,4638,4640,4642, 4644,4646,4648,4650,4652,4654, 4656,4658,4660,4662,4664,4666, 4668,4670,4672,4674,4676,4678, 4680,4682,4684,4686,4688,4690, 4692,4694,4696,4698,4700,4702, 4704,4706,4708,4710,4712,4714, 4716,4718,4720,4722,4724,4726, 4728,4730,4732,4734,4736,4738, 4740,4742,4744,4746,4748,4750, 4752,47		

Change Number of *A. externa* in water in the year 1909.
 Number for 1885 and 1886 of 1888

Location	E46 currents		T46 currents	
	No. of Bottom samples	Samples included in the average	No. of Bottom samples	Samples included in the average
Upper bay	79	13,500 1-10, 52, 92, 202, 292, 349, 541, 712, 721, 792, 799, 120, 517, 520, 761, 772, 1127, 1928 1594-5 taken at same station as 541	31	9,300 13-22, 331, 670, 746, 781, 1005, 1061, 1085-1097 (1075 duplicated)
Midson river above 1st bridge	94	8,100 49, 6, 244, 280, 285, 333, 391, 654, 639, 743, 8, 761, 713, 719, 8.	57	5,100 349, 357, 671, 621, 720, 765, 774, 783, 789, 796, 798, 800, 819, 800, 1086, 1150 (191 duplicated)
Midson river above 2nd bridge	55	5,300 229, 314, 341, 3, 488, 618 625, 8 taken in Midson sample 1106 not included	10	4,700 245, 260, 673, 678, 690, 691, 691, 698 691, 9 taken in Midson sample 1106 not included
East river above 4th gate	56	6,700 89, 4, 197, 156, 235, 6, 830, 837, 883, 1119, 1119, 1119, 740 1107-8 taken at same station as 1106 not included	61	5,600 127, 126, 128, 786, 1083, 1083, 1083, 1083, 1100 1100-1125 (1025 duplicated)
East river above 4th gate	11	1,600 8-2, 504, 506, 1109-1110	20	4,300 537, 547, 547, 553
Midson river	31	16,200 745, 225, 575, 586, 674, 676, 1106, 1109	27	15,000 20-204, 570, 571, 577, 613
Long Jack Creek	17	390 91-50, 719, 1101, 1103	23	700 57, 76, 80, 6
100 ft. from Fall	49	6,900 184, 200, 671, 874, 885, 940, 940, 941, 942, 1070-1081	31	6,000 167-183, 211, 8, 1090, 1091
Arrowy Bay	21	9,000 215, 209, 229, 940	24	6,000 300, 322, 813, 321
Blairie river at mouth	4	19,000 399, 220, 493, 4	4	48,000 227, 2, 509, 810 600 p.

1.99

1.99

Average Number of Boettia in water in the year 1909.
Averages for Ebb and Flood Tides

continued		Tides			
		Ebb currents		Flood currents	
Location	No. of Boettia caught	Boettia per c.	Samples included in the average	No. of Boettia caught	Samples included in the average
Cataraugus Kill	14	7,300	955-962-963-968-971-972- (963-4. Taken at same outlet, not included)	7	350 1037-1041-1043-1044- (1042 repeated)
St. Lawrence	31	6,700	85-105-400-403-56-700-716-747- 735-736- (636-640. Taken in or near Long Island Creek and outlet from deepened flume; not included)	744	106126-657-132-3-
Shoreland bay	—	—	1636-640. Taken in or near Long Island Creek and outlet from deepened flume; not included)	8	633-4-641-6- (633 and 641 taken in same place; not included)
Lower bay	134	1,600	404-411-425-433-452-455-460-387- 400-668-701-714-716-759-796-911-923- 1009-1024- (921 and 1020 repeated)	117	1,500 412-423-434-441-443-309-355-343- 648-654-664-673-702-818-877-910- 1001-1008-1020-1036- (1130 repeated)
Jamaica bay	14	9,800	547-548-972-986- (549-612. Taken in creek on rear ledge same outlet; not included)	10	6,400 592-596-613-615-616- (614 taken in creek not included)
Rockaway inlet	5	4,000	5816-585-973-974-	9	689-591
Kill-the-ocean 10 miles off Long Beach	—	—	No samples taken on the ebb	4	706-709-
					5. 96 P. H.

Miscellaneous Analyses not Included Elsewhere.
Bacteria in Water in the year 1919.

Location	Number of Analyses	Bacteria per C.C.	Samples included in the Averages
Old Landing near New Town Bay.	8	560	4254-427.710-713.
Piscataway river below Newark.	16	43,000	323-326.231-334.811-814.935-938
Rahway river	2	34,000	953-954
Bordentown Creek	1	6,400	693
Total	27		Note - all samples collected in these regions are included in average.
Total in previous table	1135		
Total analyses	1162		
Total used in average	1100 + 27 = 1127.		

3 x 1/2 p. 9.

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 97.

JAMES D. MAHER,
Commissioner.

Average Amount of Dissolved Oxygen in Water in the year 1909.
 Summary of Tables 9 to 15 including 732 Analyses.

Location	All Alkaline Lakes			Surface			Bottom			Edge			Flood		
	No. of Analyses	Range in Dissolved Oxygen	Average	No. of Analyses	Range in Dissolved Oxygen	Average	No. of Analyses	Range in Dissolved Oxygen	Average	No. of Analyses	Range in Dissolved Oxygen	Average	No. of Analyses	Range in Dissolved Oxygen	Average
Upper bay	80	4.03	4.8	34	3.80	6.6	23	3.96	6.4	44	3.18	6.5	32	4.26	7.1
Madison river below 100 ft. level	47	4.34	7.3	41	4.17	7.1	38	4.30	7.5	29	3.67	6.6	68	4.63	7.6
Western river above 100 ft. level	32	5.05	8.2	15	5.11	8.4	15	4.96	8.2	10	5.18	8.3	22	5.01	8.4
East river below 100 ft. level	135	3.82	6.6	56	3.63	6.0	56	3.83	6.6	63	3.53	6.1	72	4.08	7.0
East river above 100 ft. level	39	4.99	8.6	19	5.01	8.6	19	4.99	8.5	18	5.38	9.2	21	4.66	8.2
Madison river	54	3.21	5.5	27	3.08	5.4	27	3.26	5.7	32	3.21	5.5	22	3.21	5.5
Long Island creek	8	5.82	9.9	3	5.69	9.8	3	5.92	10.0	3	5.90	10.0	5	5.78	9.9
Hill man kill	14	4.59	7.9	28	4.37	7.8	28	4.70	8.1	40	4.48	7.8	24	4.76	8.2
Wash bay	26	4.31	7.6	12	4.23	7.6	12	4.87	7.7	12	4.21	7.4	13	4.41	7.8
Potomac river at mouth	9	0.36	6	4	0.33	6	4	0.40	7	4	0.30	5	4	0.42	7
Griffin Hill	24	1.66	8.2	12	4.52	8.0	12	4.81	8.4	16	4.31	7.3	8	5.61	10.0
The Meadows	37	4.70	8.3	17	4.81	8.6	17	4.55	8.0	19	4.16	7.4	18	5.18	9.2
Frederick bay	17	5.00	9.0	8	4.82	8.8	—	—	—	—	—	—	10	5.00	9.0
Lower bay	118	3.40	4.7	64	5.23	9.3	53	5.61	10.0	59	5.18	9.5	59	5.56	10.0
Amassa bay	42	4.00	7.2	19	3.90	6.9	—	—	—	16	3.80	6.7	11	4.20	8.0
Appomattox river	14	5.52	10.1	6	5.58	10.1	6	5.60	10.3	6	5.10	9.3	6	6.14	11.1
Atlantic ocean within 100 ft. of beach	4	6.05	10.5	2	6.21	11.1	2	5.89	10.0	—	—	—	4	6.05	10.5
Frederick creek	2	0.00	0	2	0.00	0	—	—	—	2	0.00	0	—	—	—
Madison creek	3	0.00	0	3	0.00	0	—	—	—	—	—	—	3	0.00	0
Wall about creek	1	0.00	6	1	0.00	6	—	—	—	—	—	—	1	0.00	6

Companions to Tables 9 to 15 Dr. James D. Madden, Commissioner.

Average Amount of Dissolved Oxygen in Water in the year 1909.
 without distinction as to Depth or Tide.

Location	Number of Analyses	Average C.C. per liter	Average percent saturation	Samples included in the Averages
Upper bay	80	4.03	68	191-342-367, 374-381, 387-398, 401-422, 430-432, 440-442, 449-451, 459-464, 539-541, 574-582, 583-585, 586-587, 588-590, 591-592, 593-594, 595-596, 597-598, 599-600, 601-602, 603-604, 605-606, 607-608, 609-610, 611-612, 613-614, 615-616, 617-618, 619-620, 621-622, 623-624, 625-626, 627-628, 629-630, 631-632, 633-634, 635-636, 637-638, 639-640, 641-642, 643-644, 645-646, 647-648, 649-650, 651-652, 653-654, 655-656, 657-658, 659-660, 661-662, 663-664, 665-666, 667-668, 669-670, 671-672, 673-674, 675-676, 677-678, 679-680, 681-682, 683-684, 685-686, 687-688, 689-690, 691-692, 693-694, 695-696, 697-698, 699-700, 701-702, 703-704, 705-706, 707-708, 709-710, 711-712, 713-714, 715-716, 717-718, 719-720, 721-722, 723-724, 725-726, 727-728, 729-730, 731-732, 733-734, 735-736, 737-738, 739-740, 741-742, 743-744, 745-746, 747-748, 749-750, 751-752, 753-754, 755-756, 757-758, 759-760, 761-762, 763-764, 765-766, 767-768, 769-770, 771-772, 773-774, 775-776, 777-778, 779-780, 781-782, 783-784, 785-786, 787-788, 789-790, 791-792, 793-794, 795-796, 797-798, 799-800, 801-802, 803-804, 805-806, 807-808, 809-810, 811-812, 813-814, 815-816, 817-818, 819-820, 821-822, 823-824, 825-826, 827-828, 829-830, 831-832, 833-834, 835-836, 837-838, 839-840, 841-842, 843-844, 845-846, 847-848, 849-850, 851-852, 853-854, 855-856, 857-858, 859-860, 861-862, 863-864, 865-866, 867-868, 869-870, 871-872, 873-874, 875-876, 877-878, 879-880, 881-882, 883-884, 885-886, 887-888, 889-890, 891-892, 893-894, 895-896, 897-898, 899-900, 901-902, 903-904, 905-906, 907-908, 909-910, 911-912, 913-914, 915-916, 917-918, 919-920, 921-922, 923-924, 925-926, 927-928, 929-930, 931-932, 933-934, 935-936, 937-938, 939-940, 941-942, 943-944, 945-946, 947-948, 949-950, 951-952, 953-954, 955-956, 957-958, 959-960, 961-962, 963-964, 965-966, 967-968, 969-970, 971-972, 973-974, 975-976, 977-978, 979-980, 981-982, 983-984, 985-986, 987-988, 989-990, 991-992, 993-994, 995-996, 997-998, 999-1000
Indian river	97	4.34	73	390-393, 402-404, 405-408, 409-412, 413-416, 417-420, 421-424, 425-428, 429-432, 433-436, 437-440, 441-444, 445-448, 449-452, 453-456, 457-460, 461-464, 465-468, 469-472, 473-476, 477-480, 481-484, 485-488, 489-492, 493-496, 497-500, 501-504, 505-508, 509-512, 513-516, 517-520, 521-524, 525-528, 529-532, 533-536, 537-540, 541-544, 545-548, 549-552, 553-556, 557-560, 561-564, 565-568, 569-572, 573-576, 577-580, 581-584, 585-588, 589-592, 593-596, 597-600, 601-604, 605-608, 609-612, 613-616, 617-620, 621-624, 625-628, 629-632, 633-636, 637-640, 641-644, 645-648, 649-652, 653-656, 657-660, 661-664, 665-668, 669-672, 673-676, 677-680, 681-684, 685-688, 689-692, 693-696, 697-700, 701-704, 705-708, 709-712, 713-716, 717-720, 721-724, 725-728, 729-732, 733-736, 737-740, 741-744, 745-748, 749-752, 753-756, 757-760, 761-764, 765-768, 769-772, 773-776, 777-780, 781-784, 785-788, 789-792, 793-796, 797-800, 801-804, 805-808, 809-812, 813-816, 817-820, 821-824, 825-828, 829-832, 833-836, 837-840, 841-844, 845-848, 849-852, 853-856, 857-860, 861-864, 865-868, 869-872, 873-876, 877-880, 881-884, 885-888, 889-892, 893-896, 897-900, 901-904, 905-908, 909-912, 913-916, 917-920, 921-924, 925-928, 929-932, 933-936, 937-940, 941-944, 945-948, 949-952, 953-956, 957-960, 961-964, 965-968, 969-972, 973-976, 977-980, 981-984, 985-988, 989-992, 993-996, 997-1000
Indian river above Spring Brook	32	5.05	83	67-78, 278-289, 511-518.
Indian river above Spring Brook	135	3.82	66	163-182, 198-199, 242-272, 465-470, 542-546, 547-578, 722-776, 795-810, 820-845
East river above Hell Gate	39	4.99	86	111-142, 557-561, 814-818.
Indian river	54	3.21	55	51-66, 97-110, 240-241, 342-343, 816-819
Long Island sound	8	5.82	99	362-366, 811-818.
Kill van Kull	64	4.59	79	35-50, 382-385, 532-538, 539-540, 542-543, 545-546, 547-548, 783-784, 786-798

5, 97 P2

(Continued) Location	Number of outcrops	Average c.c. per ton	Average percent calculation	Samples included in the averages
Maurice bog	25	4.31	76	79-80, 93-98 53.5-537.609-650
Pineau area at Quarry	8	0.36	6	87-90, 819-820, 403-409 (Samples taken on 1/2 E of bog only included)
Cotton Hill	24	4.66	82	66.5 660. 907-909
The Warehouse	37	4.70	83	103-162, 311-319, 468-473, 849-850, 919-920, 989-999 902-993
Quarry bog	17	5.00	90	690-697, 804-809 (108-303 and 310 taken in bog to back as was disposed of; not included)
Lower bog	118	5.40	97	310-319, 321-301, 901-906, 917-919, 920-921, 990-992 701-706 (The 2nd bog included in lower bog)
Upper bog	42	4.04	72	244-316, 320, 322-323, 608-609 (118-255 and 301 taken in bog as was disposed of; not included)
Hickory bog	10	5.69	101	900-908, 910-919, 929
Cotton Hill to north of bog	4	6.05	105	907-910
Pineau bog	2	0.00	0	107-108
Pineau bog	3	0.00	0	103-105
Cotton Hill bog	1	0.30	6	106 8, 97, 98

Average Amount of Dissolved Oxygen in Water in the year 1909.
 General Averages for Surface and Bottom Samples.

Location	Surface			Bottom		
	No. of Samples	Average for the Year	Sum of all Samples	No. of Samples	Average for the Year	Sum of all Samples
Upper bay	34	3.80	130.20	33	3.96	130.68
Water near the Upper Bay	41	4.17	171.07	38	4.30	163.44
Water near the Wall Gate	56	3.63	203.28	56	3.83	214.88
Water near the Wall Gate	19	5.01	95.19	19	4.94	94.86

6,777.0

Location	Depth					
	Surface			Bottom		
	No. of samples	Average C.C. per liter	Samples included in the average	No. of samples	Average C.C. per liter	Samples included in the average
Hudson river	27	3.04	51.59, 55.57, 59.61, 63.65, 99.101 103.105, 107.109, 240, 342, 344, 346 348, 350, 352, 354, 356, 358, 360. 816, 818 816, 818	27	3.26	57.54, 56, 58, 60, 62, 64, 66, 100, 102, 104, 106, 108, 110, 241, 343, 345, 347, 349, 351, 353, 355, 357, 819, 821. 817, 819
Long Island Sound near Thurgood	3	5.64	562, 564, 811	3	5.92	563, 566, 813
Kill van Kull	28	4.57	357, 37, 39, 41, 83, 45, 47, 49, 372, 384 532, 534, 537, 584, 587, 589, 592, 655, 658, 660, 681, 755, 757, 760, 786, 789, 791, 794	28	4.74	36, 88, 40, 42, 44, 46, 48, 50, 383, 385, 538, 536, 538, 586, 588, 591, 593, 657, 659, 663, 682, 756, 759, 761, 788, 790, 793, 795
Manunk bog	12	4.29	72, 81, 83, 93, 95, 97, 525, 527 529, 649, 651, 653	12	4.37	70, 82, 84, 94, 96, 98, 526, 528, 581, 650, 652, 654
Pearse river at Newark	4	0.33	87, 89, 519, 643	4	0.40	88, 90, 520, 644
Arden Kill	12	4.52	645, 647, 649, 671, 673, 675, 677, 679 747, 749, 751, 753	12	4.81	646, 648, 670, 672, 674, 676, 678, 680 748, 750, 752, 754
Warner	17	4.86	143, 145, 147, 149, 151, 153, 155, 157 159, 161, 311, 368, 371, 399, 419, 438, 442	17	4.55	144, 146, 148, 150, 152, 154, 156, 158 160, 162, 313, 370, 373, 400, 402 439, 443
Manunk bog	8	4.82	294, 296, 304, 309 (310 taken near sewer outlet not included)	—	—	895, 287 only deep samples (water shallow) 8, 97, P.5

Continued	Depth					
	Surface			Bottom		
Location	No. of samples taken	Average depth in fathoms	Samples included in the average	No. of samples taken	Average depth in fathoms	Samples included in the average
Lower bay	64	523	98 314, 321-2, 324, 326, 328, 333, 335, 337, 339, 341, 401, 403, 405, 417, 440, 441, 504, 597, 599, 601, 603, 605, 607, 609, 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633, 635, 637, 639, 641, 711, 713, 715, 717, 719, 721, 723, 725, 727, 729, 731, 733, 735, 737, 739, 741, 743, 745.	53	561	100 315, 323, 325, 327, 334, 336, 338, 342, 406, 408, 410, 412, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746.
Quonset bay	14	390	69 206, 208, 210, 212, 213, 214, 218, 230, 232-3, 285, 487, 489, 491, 643, 645-648. (216-224 taken in cracks or near seam and later not included)	—	—	347, 209, 211, 686, 688, 690, 692, 694, 696, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.
Portsmouth inlet	6	558	101 200, 202, 204, 214, 236, 238. (688 near shore not included)	6	560	103 201, 203, 205, 235, 237, 239 (684 near shore not included)
Atlantic ocean	2	621	111 407, 409	2	589	100 408, 410.
Foreman canal	2	000	0 187-188	—	—	— No deep samples.
Newtown creek	3	000	0 183-185	—	—	— No deep samples.
Willard canal	1	030	6 186	—	—	— No deep samples.

Average Amount of Dissolved Oxygen in Water in the year 1909.
Average for Ebb and Flood Tides

Location	Tides			
	Ebb Currents		Flood Currents	
	No. of S.S. for the station	Average amount of dissolved oxygen in the samples included in the average	No. of S.S. for the station	Average amount of dissolved oxygen in the samples included in the average
Upper bay	48	3.88 65 191-362-7380-1387-384-385-388 421-2, 444-451 254-261 270 283 727-785.	71	374 379 480 487 489 466 762-771. 746-797
Madison river below Spout Dam	29	3.67 66 290-293 452-458 471-483 444-448	76	423-429 484-493 499-510 699-710 846-872.
Madison river above Spout Dam	10	5.13 83 67-72 286 289	84	73-78. 278 285. 511-518
East river below Hell Gate	63	3.53 61 173-182 242-259 242-248 567-578 820-829.	72	123-172 198-9 260 277 465 470 549-556. 732-6 798-810 820 808
East river above Hell Gate	18	5.38 92 117 122 133 142. 318-815	21	111-176 121-122 587-561
Madison river	32	3.21 55 51-60 105-110 240-1 342-351 816-819	55	61-66 99-104 362-361.
Long Island Sound near Thurgate Weir	3	5.90 100 811-813	99	562-561
Kill van Kull	40	4.49 79 35-40 382-385 584-583 658-662 681-2. 786-795	82	48-50 531-538 755-761.
Newark	12	4.21 74 79-84 648-654.	78	43-48 525-531.

65.97 # 7

Location	Ely's currents		Tides		Flood currents	
	No. of samples	Time, sec. per the station	No. of samples	Time, sec. per the station	No. of samples	Time, sec. per the station
Passaic near St. Vincent	4	5.30	5	5	4	7
Quackenkill	16	4.31	7.2	8	5.61	100
Neversink	14	4.16	7.4	14	5.18	92
Quackenkill	—	—	—	10	5.00	90
Lower Neversink	54	5.29	9.5	54	5.56	100
Passaic near	16	3.80	6.7	11	4.20	90
Quackenkill	6	5.10	9.3	6	6.14	111
Quackenkill	—	—	—	—	—	—
Quackenkill	2	6.00	0	—	—	—
Quackenkill	—	—	—	3	6.00	0
Quackenkill	—	—	—	1	6.00	6
Quackenkill	—	—	—	—	—	—

Miscellaneous Averages not Included Elsewhere
Dissolved Oxygen in the year 1909

Location	Number of analyses	Average o.c. per litre	Average percent saturation	Samples included in the Averages
Up Hudson river	6	6.20	112	411-416
At Sandy Hook				
Piscataway river	12	2.36	41	85, 86, 91-92, 821-524, 605, 648.
Below Newark				
Shrewsbury river	5	5.76	105	316-320
Rahway river	2	3.56	59	643-664
Arkens creek	1	3.96	70	386
Greenwich bay	2	1.55	29	189-190
Wallabout bay	6	1.65	29	192-197
Total	34			
Total - previous table	804			
Total analyses	838			
Total used in averages	782 + 56 = 838			

Note - all samples collected in these regions are included in averages

Note - The series begins with sample No. 35

THE PEOPLE OF THE STATE OF NEW YORK,
COMPLAINANTS,

VS.

STATE OF NEW JERSEY ET AL.

COMPLAINANTS' EXHIBIT No. 98.

JAMES D. MAHER,
Commissioner.

Complaints Exhibit No. 98.
James D. MacKen
Commissioner

Examination of Decants from the Harbor Bottom, East River.

Exam- Date of nation Collec- tion	Location of Samples Approximate	Depth of		Color	Odor	Consist- ence	Opinion
		Feet	Water (Fath)				
20	25 feet off pier at E. 6th St.	Lat 40 43 18 Long 73 56 26	40	Black	H ₂ S	Sludge	Polluted
21	In slip between Piers 17-18	Lat 40 42 21 Long 74 00 08	30	"	"	"	"
22	In slip between Piers 18-16	Lat 40 42 19 Long 74 00 12	30	"	"	"	"
23	In slip between Piers 48-49	Lat 40 42 54 Long 73 56 53	80	"	"	"	"
24	In slip between Piers 18-19	Lat 40 42 23 Long 74 00 07	90	"	"	"	"
25	100 feet from abutment Williams- burg Bridge, Manhattan side	Lat 40 42 51 Long 73 56 29	40	"	"	"	"
26	In slip between Piers 11-15	Lat 40 42 13 Long 74 00 22	38	"	"	"	"
27	In slip between Piers 30-31	Lat 40 42 32 Long 73 59 36	35	"	"	"	"
28	In slip between Piers 14-15	Lat 40 42 18 Long 74 00 15	35	"	"	"	"
29	In slip between Piers 34-36	Lat 40 42 38 Long 73 59 21	35	"	"	"	"
30	100 feet off center line	Lat 40 42 24 Long 74 00 08	40	"	Oily H ₂ S	"	"
31	bulkhead between Piers 19-19	Lat 40 43 31 Long 73 56 21	40	"	"	"	"
32	25 feet off bulkhead just east of E. 12th St.	Lat 40 42 59 Long 73 56 27	35	"	Oily Sludge	"	"
33	100 feet off pier, Bradley Con- tracting Co., East River, Man- hattan	Lat 40 43 26 Long 73 56 23	40	"	Oily H ₂ S	Sludge	"
34	In slip between Piers 12-13	Lat 40 42 15 Long 74 00 19	40	"	"	"	"
35	25 feet off E. 8th St. Pier	Lat 40 43 20 Long 73 56 22	40	"	Oily H ₂ S	"	"

Ex. 98, P. 1.

9801713

Examination of Deposits from the Harbor Bottom, East River.

Examination No.	Date of collection	Location of Samples		Depth of Water, Feet	Color	Odor	Consistency	Opinion
		Approximate	Exact					
36	Nov. 16, 1908	In slip between Piers 32-33	Lat 40 42 33 Long 73 59 29	35	Black	Oily H ₂ S	Sludge	Polluted
37	"	In slip between Piers 27-28	Lat 40 42 31 Long 73 59 44	36			Sludge Clay	"
38	"	In slip between Piers 33-34	Lat 40 42 34 Long 73 59 25	36	Black	Oily H ₂ S	Sludge	"
39	"	In slip between Piers 45-46	Lat 40 42 47 Long 73 59 32	35	"	"	"	"
40	"	25 feet off bulkhead E. 10th St.	Lat 40 43 27 Long 73 59 24	40	"	Oily	"	"
41	"	In slip between Piers 28-29	Lat 40 42 32 Long 73 59 41	36	"	tarry Oily	"	"
42	"	In slip between Piers 29-30	Lat 40 42 32 Long 73 59 41	36	"	"	"	"

Ex. 98. P. 2.

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exami- Date of nation collec- No. tion	Location of Samples Approximate	Exact		Depth of Water (feet)	Color	Odor	Consist- ency	Opinion
		Lat	Long					
43	Dec. 5, 50 feet off east pier, Governors Island	Lat 40 41 30 Long 74 00 46	40	Black	Oily	Sludge	Polluted	
44	" " 300 feet southeast of Ellis Island	Lat 40 41 50 Long 74 02 20	50	Gray	Kerosene	Clay	Doubtful	
48	" " 300 feet off Owl Head	Lat 40 38 20 Long 74 02 19	40	Grayish Brown	"	"	"	
49	" " About midway between Robbins Reef and Liberty Island	Lat 40 40 18 Long 74 03 22	30	Brown	"	"	"	
50	" " 100 feet off black spar buoy south of Black Tom channel	Lat 40 41 04 Long 74 02 40	40	"	"	"	Unpolluted	
51	Dec. 10, Midway between Battery and Governors Island	Lat 40 41 53 Long 74 01 04	40	"	"	Sludge	Doubtful	
52	" " 500 feet northwest of Governors Island light	Lat 40 41 38 Long 74 01 13	50	"	"	Sludge Clay	Polluted	
53	" " 50 feet off Governors Island	Lat 40 41 30 Long 74 01 16	40	"	"	"	Doubtful	
54	" " 100 feet west of Governors Island	Lat 40 41 18 Long 74 01 27	35	"	"	"	Polluted	
55	" " 2500 feet west of Governors Island	Lat 40 41 07 Long 74 02 05	70	"	"	"	Doubtful	
56	" " 3000 feet southwest of Governors Island	Lat 40 40 58 Long 74 02 08	70	"	"	"	"	
57	" " 3/4 mile off Ellis Basin	Lat 40 40 30 Long 74 01 52	25	"	"	Sludge Clay-sand	"	
58	" " 100 feet southwest of Governors Island	Lat 40 41 10 Long 74 01 36	30	"	"	"	"	
59	" " 500 feet southwest of Governors Island	Lat 40 40 58 Long 74 01 36	40	"	"	Sludge Clay	Polluted	
60	" " 200 feet east of Bell buoy, Governors Island	Lat 40 40 58 Long 74 01 48	40	"	"	"	Doubtful	
61	Nov. 28, 75 feet southwest of Aquarium 1906	Lat 40 42 11 Long 74 01 03	30	Black	Oily	"	"	

Ex. 98, P. 3.

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam- ination No.	Date of collec- tion	Location of Samples		Exact S.	Depth of Water (feet)	Color	Odor	Consist- ency	Opinion
		Approximate							
62	Nov. 30, 1908	50 feet outside slip between Piers 23-24, Brooklyn	Lat 40 41 32 Long 74 00 16	40	-	-	-	Cone Sand	Excellent
63	"	150 feet outside slip between Piers 24-26, Brooklyn	Lat 40 41 28 Long 74 00 20	40	-	-	-	Cone Sludge	Polluted

Ex. 98. P. 4

Examination of Deposits from the Harbor Bottom, Hudson River.

Exam- Date of- nation collec- tion	Location of Samples	Approximate	Depth of		Color	Odor	Consist- ency	Opinion
			Feet	Feet				
64	Dec. 15, 1906	Midstream opposite Pier A, Hudson River	Lat 40 42 39 Long 74 01 34	80	-	-	Sludge	Doubtful
66	"	1800 feet off Pier A, Hudson River	Lat 40 42 39 Long 74 01 31	80	-	-	Gravel	"
67	"	3000 feet off Pier A, Hudson River	Lat 40 42 30 Long 74 01 47	80	-	-	Gravel	Polluted
68	"	Hudson River off Pier A	Lat 40 42 35 Long 74 01 06	80	-	-	Sludge	Doubtful
69	"	300 feet off shore C.B.R. E.J. clock on line with Pier A, N.R.	Lat 40 42 36 Long 74 02 00	25	Black	-	Clay	"

Ex. 90, P. 6.

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam. No.	Date of Collection	Approximate Location of Sample	Depth of Water (feet)		Color	Other	Consist- ency	Opinion
			East S. 1. "	West S. 2. "				
70	Dec. 16, 1909	8000 feet east of Ellis Island	Lat 40 42 03	Long 74 01 58	Black	-	Sludge Clay	Doubtful
71	"	8000 feet northeast of Ellis Island	Lat 40 42 11	Long 74 01 59	-	-	-	Feinted
72	"	2500 feet east of Ellis Island	Lat 40 42 00	Long 74 01 58	-	-	-	Doubtful
73	"	" " " "	Lat 40 41 52	Long 74 01 58	-	-	-	Feinted
74	"	1500 feet southeast of Governors Island	Lat 40 42 13	Long 74 01 54	-	-	-	"
75	"	2500 feet southeast of Ellis Island	Lat 40 41 41	Long 74 01 58	-	-	-	"
76	"	3000 feet southeast of Ellis Island	Lat 40 41 28	Long 74 01 58	-	-	-	Doubtful
77	"	2500 feet southeast of Ellis Island	Lat 40 41 37	Long 74 01 58	Black	-	-	Feinted
78	"	500 feet west of Governors Island	Lat 40 41 18	Long 74 01 58	-	-	-	"
79	"	100 feet off buoy N.B. off Liberty Island	Lat 40 41 18	Long 74 02 37	-	-	-	"
80	"	500 feet south of red gas buoy S. Black Tom channel	Lat 40 40 59	Long 74 02 44	-	-	-	Doubtful
81	"	South edge Black Tom channel	Lat 40 41 12	Long 74 02 50	Brown	-	Slag	"
82	Dec. 16, 1909	500 feet off Battery	Lat 40 42 07	Long 74 01 57	-	-	Sludge Feinted Gravel-clay	Feinted
83	"	Halfway across Hudson River opposite Pier A	Lat 40 42 19	Long 74 01 54	-	-	Sludge Clay	"
84	"	1/2 way across Hudson River opposite Pier A	Lat 40 42 24	Long 74 01 54	-	-	-	"
85	"	3000 feet east of Ellis Island	Lat 40 41 54	Long 74 01 57	Brown	-	-	"
86	"	2500 feet off S.B. of N.J. pier	Lat 40 42 17	Long 74 01 59	Black	-	Sludge	Doubtful

Ex. 38, P. 6.

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam. Date of station collection No. 1100	Approximate Location of Sample	Depth of Water (feet)		Color	Consist-ency	Oyster
		Lat	Long			
87 Dec. 16, 1908	1000 feet off S.E. of N.Y. pier	Lat 40 42 19	Long 74 01 43	Black	Sludge	Doubtful
88 "	500 feet off Battery	Lat 40 42 27	Long 74 01 11	"	"	Refuted
89 "	180 feet off Battery	Lat 40 42 09	Long 74 01 08	"	"	"
90 "	2200 feet off S.E. of N.Y. pier	Lat 40 42 12	Long 74 01 39	"	"	"
91 "	1800 feet off S.E. of N.Y. pier	Lat 40 42 13	Long 74 01 47	"	Sludge	"
92 "	600 feet east of Ellis Island	Lat 40 41 57	Long 74 02 04	"	Gravel	"
93 "	600 feet east of Ellis Island	Lat 40 41 59	Long 74 02 10	"	Sludge	"
94 Dec. 17, 1908	600 feet east of Liberty Island	Lat 40 41 21	Long 74 02 24	Black Oily	"	"
95 "	2800 feet east of Liberty Island	Lat 40 41 26	Long 74 02 28	Brown	Sludge	"
96 "	2800 feet east of Governors Island	Lat 40 41 28	Long 74 02 34	"	Sludge	"
97 "	620 feet east of Liberty Island	Lat 40 41 24	Long 74 02 30	"	"	"
98 "	1 1/2 mile southeast of Battery	Lat 40 41 26	Long 74 02 36	Black Oily	Sludge	"
99 "	" " "	Lat 40 41 28	Long 74 02 38	"	"	"
100 Dec. 21, 1908	800 feet northeast of Governors Island	Lat 40 41 35	Long 74 02 47	"	Sludge	"
101 "	800 feet northeast of Governors Island	Lat 40 41 38	Long 74 02 50	Black Oily	"	"
102 "	200 feet northeast of Governors Island	Lat 40 41 38	Long 74 02 58	"	"	"

Ex. 98, P. 7.

Examination of Deposits from the Harbor Bottom, Upper Bay.

Examination No.	Date of collection	Location of Samples		Exact Depth of Water (feet)	Color	Odor	Consist.	Opinion
		Approximate						
103	Dec. 21, 1908	3000 feet east of Ellis Island	Lat 40 41 57	40	-	-	Sludge	Polluted
104	"	300 feet north of Liberty Island docks	Long 74 01 46	16	-	-	Clay	Doubtful
106	"	500 feet south of Ellis Island	Lat 40 41 27	10	-	-	"	Polluted
106	"	On line Liberty Island to Ellis Island halfway	Long 74 02 35	8	-	-	"	"
107	"	600 feet south of east dock of Ellis Island	Lat 40 41 37	15	-	-	"	"
108	"	300 feet east of Ellis Island	Long 74 02 30	15	-	-	"	"
109	"	500 feet north of Ellis Island	Lat 40 41 59	10	-	-	Sludge	"
110	"	300 yds. off Ellis Island on line with Liberty and Ellis Is.	Long 74 02 16	6	-	-	Clay	Unpolluted
111	"	300 feet off dock, Communipaw	Lat 40 41 44	6	-	-	Clay	Polluted
112	"	100 yds. off 4th dock south of C.R.R. N.J. Ferry	Long 74 02 17	20	-	-	Sludge	"
113	"	Halfway between C.R.R. of N.J. Ferry and Pier A	Lat 40 42 14	50	-	-	"	Doubtful
114	Dec. 22, 1908	500 feet southeast of Liberty Island	Long 74 01 59	40	-	Oily	Clay	Polluted
115	"	2800 feet southeast of Ellis Island	Lat 40 41 17	40	-	"	Sludge	"
116	"	2000 feet southeast of Ellis Island	Long 74 02 33	40	-	"	Clay	"
117	"	2800 feet southeast of Ellis Island	Lat 40 41 52	40	-	"	Sludge	"
118	"	1000 feet southeast of Liberty Island	Long 74 02 03	40	-	Oily	Clay	"
119	"	500 feet east of C.R.R. of N.J. Ferry	Lat 40 41 44	40	-	-	Sludge	"
			Long 74 01 47	40	-	-	Clay	"
			Lat 40 41 08	40	-	-	Sludge	"
			Long 74 02 26	40	-	-	Clay	"
			Lat 40 42 25	40	-	-	Sludge	"
			Long 74 01 57	40	-	-	Sludge	"

Ex. 98. P. 8.

Examination of Deposits from Harbor Bottom, Upper Bay.

Exam- nation No.	Date of collec- tion	Location of Samples Approximate	Exact		Depth of Water (feet)	Color	Odor	Consist- ency	Opinion
			Lat	Long					
120	Dec. 22, 1908	500 feet southeast of C.R.R. of N.J. Ferry	Lat 40 42 22 Long 74 01 59		40	-	-	Sludge Clay	Polluted
121	"	2000 feet northeast of Liberty Island	Lat 40 41 37 Long 74 02 21		40	Black	-	"	"
122	Dec. 24, 1908	200 feet north of Black Tom Pier	Lat 40 41 45 Long 74 03 40		8	Brown	-	Clay	Doubtful
123	"	100 yds. northeast of Black Tom	Lat 40 41 43 Long 74 03 08		8	-	-	Sludge Clay	"
124	"	Midway between Black Tom Water Tower and Liberty Island	Lat 40 41 22 Long 74 03 06		8	Black	-	Sludge	Unpolluted
125	"	300 feet north of Liberty Island	Lat 40 41 30 Long 74 02 4		8	"	-	"	Doubtful
126	"	600 feet north of Liberty Island	Lat 40 41 34 Long 74 02 43		6	-	-	-	Polluted
127	"	West end Liberty Island to west end Ellis Island, Midway	Lat 40 41 40 Long 74 02 41		6	Black	-	Sludge	"
128	"	200 yds. from S.W. Cor. of Ellis Island	Lat 40 41 53 Long 74 02 47		6	-	-	Sludge Clay	Doubtful
129	"	100 yds. off S.W. Cor. of Ellis Island	Lat 40 41 57 Long 74 02 42		6	-	-	"	"
130	"	200 feet off S.W. Cor. of Ellis Island on line Black Tom Water Tower	Lat 40 41 53 Long 74 02 40		6	-	-	"	Polluted
131	"	200 yds. from Ellis Island on line Black Tom Water Tower	Lat 40 41 52 Long 74 02 45		8	Black	-	Sludge	"
132	"	On line S.W. corner Ellis Island and Black Tom Water Tower, halfway	Lat 40 41 43 Long 74 02 54		8	-	-	Sludgy Clay	"
133	"	On line S.W. corner Ellis Island and Black Tom Water Tower, about halfway	Lat 40 41 38 Long 74 02 53		8	-	-	Sludge Clay	Doubtful

Ex. 98. P. 9.

Examination of Deposits From the Harbor Bottom, Upper Bay.

Examination No.	Date of collection	Location of Samples		Depth Water (feet)	Color	Odor	Consist.	Opinion
		Approximate	Exact					
134	Dec. 24, 1908	On line S.W. cor. of Ellis Island and Black Tom Water Tower, 200 yds. off Black Tom shore	Lat 40 41 39 Long 74 03 18	8	-	-	Sludge Clay	Unpolluted
135	"	On line S.W. cor. of Ellis Island and Black Tom Water Tower, 100 yds. off Black Tom shore	Lat 40 41 38 Long 74 03 23	8	-	-	"	Polluted
136	"	On line S.E. cor. of Ellis Island and N.W. cor. Liberty, 100 yds. off Ellis Island	Lat 40 41 44 Long 74 02 36	8	-	-	"	"
137	"	On line S.E. cor. of Ellis Island and N.W. cor. Liberty, midway 100 yds. off N.W. cor. Ellis Island	Lat 40 41 37 Long 74 02 39	8	-	-	"	"
138	"	Near Gas buoy 2, Black Tom channel	Lat 40 42 04 Long 74 02 29	6	-	-	"	"
139	"	Midway between buoys 2 and 4	Lat 40 41 07 Long 74 02 37	15	-	Oily	Clay	"
140	"	Black Tom channel	Lat 40 41 12 Long 74 02 46	15	-	"	"	"
141	"	Between buoys 4 and 6	Lat 40 41 18 Long 74 02 52	15	-	-	Sludge Clay	"
142	"	Near Liberty Island	Lat 40 41 25 Long 74 02 48	8	-	-	"	"
143	"	Midway between Ellis Island and Liberty Island	Lat 40 41 42 Long 74 02 48	8	-	-	"	Doubtful
144	"	1000 feet north of Liberty Island	Lat 40 41 37 Long 74 02 45	6	-	-	"	Unpolluted
145	"	100 feet off S.W. corner of Ellis Island	Lat 40 41 57 Long 74 02 36	12	-	-	Clay	"
146	"	100 feet off center line of the west bulkhead, Ellis Island	Lat 40 42 00 Long 74 02 32	8	-	-	"	Doubtful
147	Feb. 12, 1909	1000 feet west of Erie Basin	Lat 40 40 24 Long 74 01 20	36	Black	Oily	Sludge Clay	Polluted
148		1500 feet west of Erie Basin	Lat 40 40 29 Long 74 01 25	15	"	tarry	Sludge Sand	"

Ex. 98, P. 10

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam- ination No.	Date of collection	Location of Samples		Depth of Water (feet)	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
149	Feb. 12, 1902	2000 feet west of Erie Basin	Lat 40 40 34 Long 74 01 32	18	-	-	Sand	Unpolluted
150	"	2800 feet west of Erie Basin	Lat 40 40 37 Long 74 01 37	20	-	-	"	Polluted
151	"	3500 feet west of Erie Basin	Lat 40 40 40 Long 74 01 42	20	Black	Tarry Sludge Oily Clay	"	"
152	"	4000 feet west of Erie Basin	Lat 40 40 42 Long 74 01 43	20	"	"	Sludge Clay	"
153	"	4500 feet west of Erie Basin	Lat 40 40 47 Long 74 01 54	20	"	Oily	"	"
154	"	5000 feet west of Erie Basin	Lat 40 40 50 Long 74 02 00	20	"	"	Sand Sludge Clay	"
155	"	6000 feet west of Erie Basin	Lat 40 40 57 Long 74 02 10	20	"	"	Sludge Clay	"
156	"	5000 feet east of Black Tom	Lat 40 41 01 Long 74 02 19	20	"	"	"	"
157	"	4000 feet east of Black Tom	Lat 40 41 06 Long 74 02 30	10	"	"	"	"
158	"	500 feet south of Liberty Island	Lat 40 41 18 Long 74 02 38	10	"	"	Sludge Clay	"
159	"	500 feet south of Caven Point	Lat 40 41 36 Long 74 04 58	6	"	"	Sludge Clay	Unpolluted
160	"	1000 feet south of Caven Point	Lat 40 41 58 Long 74 04 56	6	"	"	"	"
161	"	1000 feet southeast of Caven Point	Lat 40 41 26 Long 74 04 21	10	"	"	"	"
162	"	1800 feet southeast of Caven Point	Lat 40 41 22 Long 74 04 22	10	"	"	"	Doubtful
163	"	1800 feet southeast of Caven Point	Lat 40 41 19 Long 74 04 11	10	"	"	"	"

Ex. 98. P. 11

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam- ination No.	Date of collec- tion	Location of Samples		Depth of Water (feet)	Color	Odor	Consist- ency	Opinion
		Approximate	Exact S. N.					
164	Feb. 12.	2000 feet southeast of Caven Point	Lat 40 41 18 Long 74 03 26	10	Black	-	Sludge Clay	Unpolluted
165	"	2500 feet southeast of Caven Point	Lat 40 41 07 Long 74 03 41	10	"	-	"	"
166	"	4200 feet southeast of Caven Point	Lat 40 41 07 Long 74 03 27	10	"	-	Sand Clay	"

Ex. 28. P. 12

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued.)

Examining- Site No.	Date of collec- tion	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion
		Approximate	Depth in feet					
167	Feb. 10, 1909	2000 feet east of buoy B 14 off Gowanus Bay	Lat 40 40 08 Long 74 01 43	20	Black	Oily	Sludge	Polluted
168	"	1000 feet east of buoy B 14 off Gowanus Bay	Lat 40 40 08 Long 74 01 43	20	Black	Oily	Sludge	Polluted
169	"	1000 feet north of buoy B 14 off Gowanus Bay	Lat 40 40 13 Long 74 02 08	25	Black	Oily	Sludge	Polluted
170	"	2000 feet northeast of buoy B 14 off Gowanus Bay	Lat 40 40 28 Long 74 02 18	28	Black	Oily	Sludge	Polluted
171	"	3000 feet northeast of buoy B 14 off Gowanus Bay	Lat 40 40 38 Long 74 02 27	30	Black	Oily	Sludge	Polluted
172	"	4000 feet northeast of buoy B 14 off Gowanus Bay	Lat 40 40 40 Long 74 02 32	30	Brown	Oily	Sludge	Polluted
173	"	4500 feet northeast of buoy B 14 off Gowanus Bay	Lat 40 40 43 Long 74 02 37	30	Black	Oily	Sludge	Polluted
174	"	5000 feet northeast of buoy B 14 off Gowanus Bay	Lat 40 40 50 Long 74 02 38	30	Black	Oily	Sludge	Polluted
175	"	5500 feet northeast of buoy B 14 off Gowanus Bay	Lat 40 40 47 Long 74 02 37	30	Black	Oily	Sludge	Polluted
176	"	6000 feet north of buoy B 14 off Gowanus Bay	Lat 40 40 45 Long 74 02 34	40	Black	Oily	Sludge	Polluted
177	"	8000 feet north of buoy B 14 off Gowanus Bay	Lat 40 40 48 Long 74 02 30	38	Black	Oily	Sludge	Polluted
178	"	10000 feet north of buoy B 14 off Gowanus Bay	Lat 40 40 48 Long 74 02 27	36	Black	Oily	Sludge	Polluted
179	"	12000 feet north of buoy B 14 off Gowanus Bay	Lat 40 40 31 Long 74 02 26	40	Black	Oily	Sludge	Polluted
180	"	18000 feet north of buoy B 14 off Gowanus Bay	Lat 40 40 30 Long 74 02 10	40	Black	Oily	Sludge	Polluted

Ex. 96, P. 13

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued.)

Sta- tion No.	Date of Collec- tion	Location of Samples		Depth of water (Feet)	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
181	Feb. 16, 1899	8000 feet north of buoy 0 2	Lat 40 40 39 Long 74 03 14	40		Barry Oil	Sludge slay	Polluted
182	"	8000 feet northeast of buoy 0 2	Lat 40 40 56 Long 74 03 18	80			Sludge slay	Polluted
183	"	1 mile northeast of buoy 0 2	Lat 40 40 56 Long 74 03 33	80	Black		Sludge slay	Polluted
184	Feb. 19,	Near buoy H 14 46 south of Swains Bay	Lat 40 43 04 Long 74 02 06	80			Sludge slay	Polluted
185	"	800 feet northeast of buoy H 14	Lat 40 40 07 Long 74 02 08	80	Black	Oil	Sludge slay	Polluted
186	"	1000 feet east of buoy H 14	Lat 40 40 04 Long 74 01 57	80	Black	Oil	Sludge slay	Polluted
187	"	1600 feet east of buoy H 14	Lat 40 40 00 Long 74 01 50	80	Black	Oil	Sludge slay	Polluted
188	"	1800 feet east of buoy H 14	Lat 40 40 00 Long 74 01 40	80	Black	Oil	Sludge slay	Polluted
189	"	1800 feet off southern end of Erie Basin	Lat 40 39 57 Long 74 01 34	80		Barry oil	Sludge slay	Polluted
190	"	1900 feet off southern end of Erie Basin	Lat 40 39 54 Long 74 01 30	80		Barry oil	Sludge slay	Polluted
191	"	1800 feet off southern end of Erie Basin	Lat 40 39 53 Long 74 01 28	80		Barry oil	Sludge slay	Polluted
192	"	1800 feet off southern end of Erie Basin	Lat 40 39 53 Long 74 01 21	80		Barry oil	Sludge slay	Polluted
193	"	900 feet off southern end of Erie Basin	Lat 40 39 52 Long 74 01 16	80	Black	Oil	Sludge slay	Polluted
194	Feb. 23,	8000 feet off 30th St. Brooklyn	Lat 40 39 40 Long 74 01 13	80	Black	Barry oil	Sludge slay	Polluted

Ex. 56, p. 24

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued.)

Exam- ina- tion No.	Date of collec- tion	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
195	Feb. 23, 1909	2500 feet off 39th St. Brooklyn	Lat 40 39 38 Long 74 01 26	20	Black	Oily	Sludge	Polluted
196	"	2600 feet off 39th St.	Lat 40 39 42	25	Black	Oily	Sludge sand	Polluted
197	"	Brooklyn 1000 feet east of buoy N 14 off Gowanus Bay	Long 74 01 21 Lat 40 40 00	25	Black		Sludge clay	Polluted
198	"	1000 feet northeast of buoy N 14 off Gowanus Bay	Long 74 01 20 Lat 40 39 57	20	Black		Sludge clay	Polluted
199	"	Near buoy N 14 off Gowanus Bay	Long 74 01 54 Lat 40 40 01	25	Black		Sludge clay	Polluted
200	"	500 feet west of buoy N 14 off Gowanus Bay	Long 74 02 12 Lat 40 40 08	30	Black		Sludge clay	Polluted
201	"	1000 feet west of buoy N 14 off Gowanus Bay	Long 74 02 15 Lat 40 40 08	30			Sand	Polluted
202	"	1000 feet northwest of buoy N 14 off Gowanus Bay	Long 74 02 30 Lat 40 40 14	30	Black		Sludge clay	Polluted
203	"	2000 feet northwest of buoy N 14 off Gowanus Bay	Long 74 02 29 Lat 40 40 21	30	Black		Sludge clay	Polluted
204	"	3000 feet northwest of buoy N 14 off Gowanus Bay	Long 74 02 27 Lat 40 40 19	40	Black		Sludge clay	Polluted
205	Feb. 26, 1909	1000 feet north of Buoy S 2	Long 74 02 50 Lat 40 40 20	40	Brown		Sand clay	Polluted
206	"	2500 feet northwest of buoy G 2	Long 74 03 08 Lat 40 40 29	10				Polluted
207	"	3000 feet northwest of buoy G 2	Long 74 03 13 Lat 40 40 38	10			clay	Polluted
208	"	4000 feet northwest of buoy G 2	Long 74 03 16 Lat 40 40 37	10	Black		clay	Doubtful

Ex. 98. P. 15

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued.)

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth of water Exact " (feet)	Color	Consist- ency	Opinion
		Approximate					
209	Feb. 26, 1909	5000 feet northwest of buoy G 2	Lat 40 40 44 Long 74 03 28	10	Black	Clay	Unpolluted
210	"	1 mile northwest of buoy G 2	Lat 40 40 52 Long 74 03 28	10	Black	Clay	Polluted
211	"	3500 feet northeast of terminal, Greenville	Lat 40 49 57 Long 74 03 39	8	Black	Clay	Doubtful
212	"	3000 feet northeast of terminal, Greenville	Lat 40 49 57 Long 74 03 44	8	Black	Clay	Doubtful
213	"	3500 feet north of P. R. R. terminal, Greenville	Lat 40 41 03 Long 74 03 52	8	Black	Clay	Unpolluted
214	"	3000 feet southeast of Caven Point	Lat 40 41 04 Long 74 04 00	8	Brown	Sub-soil	Doubtful
215	"	2000 feet southeast of Caven Point	Lat 40 41 11 Long 74 04 04	8	Brown	Sub-soil	Unpolluted
216	"	2000 feet south of Caven Point	Lat 40 41 12 Long 74 04 15	4	Brown	Sub-soil	Unpolluted
217	"	3000 feet south of Caven Point	Lat 40 41 03 Long 74 04 18	4		Clay	Unpolluted
218	"	3500 feet south of Caven Point	Lat 40 40 57 Long 74 04 13	4		Clay	Doubtful
219	"	2500 feet northeast of terminal, Greenville	Lat 40 40 54 Long 74 04 01	8		Clay	Unpolluted
220	"	2000 feet northeast of terminal, Greenville	Lat 40 40 50 Long 74 03 57	8		Clay	Unpolluted
221	"	3000 feet northeast of terminal, Greenville	Lat 40 40 47 Long 74 03 50	8		Clay	Unpolluted
222	"	3000 feet east of P. R. R. terminal, Greenville	Lat 40 40 42 Long 74 03 42	12	Black	Sub-soil	Doubtful

Ex. 98, P. 16

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued.)

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
223	Feb. 26, 1909	2500 feet east of P. R. R. terminal, Greenville	Lat 40 40 39 Long 74 03 36	12	Black		Clay	Doubtful
224	"	3900 feet east of P. R. R. terminal, Greenville	Lat 40 40 31 Long 74 03 28	12	Black		Clay	Polluted
225	"	4000 feet east of P. R. R. terminal, Greenville	Lat 40 40 23 Long 74 03 23	15	Black		Clay	Polluted
226	"	1600 feet northwest of buoy G 2	Lat 40 40 19 Long 74 03 14	12	Black	Oily	Sludge subsoil	Polluted
227	"	1000 feet northwest of buoy G 2	Lat 40 40 10 Long 74 03 06	12		Oily	Sludge sand	Polluted
228	"	500 feet northeast of Buoy G 2	Lat 40 40 06	20		Oily	Gravel Sludge sand	Doubtful
229	"	1000 feet south of buoy G 2	Long 74 02 55 Lat 40 39 52	40	Black	Oily	Gravel Sludge clay	Doubtful
230	"	1600 feet southeast of buoy G 2	Long 74 02 58 Lat 40 39 50	50			Sludge	Doubtful
231	Feb. 27, 1909	3/4 mile southwest of buoy N 14 off Gowanus Bay	Long 74 02 43 Lat 40 39 36	30		Oily	Sludge sand, clay	Unpolluted
232	"	1/2 mile southwest of buoy N 14 Off	Long 74 02 52 Lat 40 39 49	30		C-2y	Sludge sand	Polluted
233	"	1/2 mile southwest of buoy N 14	Long 74 02 38 Lat 40 39 48	30		Oily	Sludge sand	Polluted
234	"	2400 feet south of buoy N 14	Long 74 02 32 Lat 40 39 40	30			Sand	Polluted
235	"	2300 feet south of buoy N 14	Long 74 02 24 Lat 40 39 38	30	Black	Oily	Clay sand	Polluted
236	"	3000 feet southeast of buoy	Long 74 02 08 Lat 40 39 54 Long 74 01 59	20	Black	Oily	Clay	Polluted

Ex. 98. P. 17

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued.)

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth of water	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
237	Feb. 27, 1909	3500 feet southeast of buoy E 14	Lat 40 39 33 Long 74 01 51	20	Black	Oily	Clay	Polluted
238	"	2900 feet off shore opposite 40th St. Brooklyn	Lat 40 39 27 Long 74 01 40	20		Oily	Sand	Polluted
239	"	2100 feet off shore opposite 39th St. Brooklyn	Lat 40 39 27 Long 74 01 28	20	Black		Sludge clay	Polluted
240	"	About 1 mile northeast of Robbins Reef light	Lat 40 39 40 Long 74 02 51	40	Black	Oily	Clay	Polluted
241	"	About 1 mile northeast of Robbins Reef light	Lat 40 39 43 Long 74 03 01	40	Black	Oily	Clay	Polluted
242	"	About 7/8 mile northeast of Robbins Reef light	Lat 40 39 49 Long 74 03 08	40	Black	Oily	Clay	Polluted
243	"	About 1 mile northeast of Robbins Reef light	Lat 40 39 55 Long 74 03 07	40	Black	Oily	Clay	Polluted
244	"	About 1 mile north of Robbins Reef light	Lat 40 40 03 Long 74 03 13	40	Black		Sludge subsoil	Polluted
245	"	About 1 mile north of Robbins Reef light	Lat 40 40 07 Long 74 03 22	40	Black		Sludge	Polluted
246	"	About 1 mile north of Robbins Reef light	Lat 40 40 08 Long 74 03 34	40	Black		Sludge	Polluted
247	"	About 1 mile north of Robbins Reef light	Lat 40 40 18 Long 74 03 42	40	Brown		Subsoil	Doubtful
248	"	About 1 mile north of Robbins Reef light	Lat 40 40 20 Long 74 03 54	40	Brown		Subsoil	Polluted
249	Mar. 3, 1909	1600 feet off shore 65th St. Brooklyn	Lat 40 39 49 Long 74 02 15	30	Brown		Subsoil	Polluted
250	"	1700 feet off shore 65th St. Brooklyn	Lat 40 39 53 Long 74 02 08	30	Brown		Subsoil	Polluted

Ex. 96. P. 18

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued.)

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
251	Mar. 3, 1909	2500 feet off shore 65th St.	Lat 40 38 57 Long 74 02 20	30			Sand	Polluted
252	"	3600 feet off shore 65th St.	Lat 40 39 02 Long 74 02 25	30	Oily		Sand	Polluted
253	"	3000 feet off shore 65th St.	Lat 40 39 58 Long 74 02 36	30	Oily		Sand	Polluted
254	"	4200 feet off shore 65th St.	Lat 40 39 02 Long 74 02 43	30	Oily		Sand	Doubtful
255	"	1 mile off shore 65th St.	Lat 40 39 04 Long 74 02 51	30	Oily		Sludge sand	Polluted
256	"	1 mile off shore 65th St.	Lat 40 39 58 Long 74 02 58	30	Brown Oily		Clay sand	Polluted
257	"	1/2 mile east of Robbins Reef ball buoy	Lat 40 39 11 Long 74 03 09	35	Brown		Clay	Doubtful
258	Mar. 6, 1909	1300 feet off shore 60th St.	Lat 40 39 00 Long 74 01 52	30	Brown Oily		Clay	Polluted
259	"	2600 feet off shore 62nd St.	Lat 40 38 58 Long 74 02 08	30	Black		Sludge clay	Polluted
260	"	3200 feet off shore 60th St.	Lat 40 39 03 Long 74 02 03	30			Sand	Doubtful
261	"	3900 feet off shore 60th St.	Lat 40 39 09 Long 74 02 14	30			Sand	Unpolluted
262	"	4400 feet off shore 60th St.	Lat 40 39 12 Long 74 02 21	30	Oily		Sludge sand	Polluted
263	"	1 mile off shore 60th St.	Lat 40 39 19 Long 74 02 27	30	Oily		Sludge sand	Polluted
264	"	1 1/4 mile off shore 60th	Lat 40 39 22 Long 74 02 40	30	Oily		Sludge sand	Polluted
265	"	1 1/8 mile off shore 60th	Lat 40 39 13 Long 74 02 42	35	Oily		Sludge sand	Polluted

Ex. 98, 2, 10

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued.)

Exam- Date of ina- collec- tion No.	Approximate Location of Sample	Exact Locality	Depth of water (feet)	Color	Odor	Consist- ency	Opinion
266	Mar. 6. 1209	1 1/2 mile off shore 60th St. Brooklyn	Lat 40 39 29 Long 74 03 54	Brown		Clay	Polluted
267	"	1 3/4 mile off shore 60th St. Brooklyn	Lat 40 39 35 Long 74 03 56	Black	Oily	Clay	Unpolluted
268	"	900 feet north of Robbins Reef Bell buoy	Lat 40 39 24 Long 74 03 52			Gravel	Unpolluted
269	"	1000 feet northeast of Robbins Reef bell buoy	Lat 40 39 17 Long 74 03 40			Sludge clay	Polluted
270	"	2000 feet east of Robbins Reef bell buoy	Lat 40 39 07 Long 74 03 37	Black	Oily	Sludge clay	Polluted
271	"	2800 feet east of Robbins Reef bell buoy	Lat 40 39 06 Long 74 03 19	Black	Oily	Clay	Polluted
272	"	1 mile off shore, 66th St. Brooklyn	Lat 40 39 11 Long 74 02 50		Oily	Sludge sand	Polluted
273	"	1800 feet south of Robbins Reef light	Lat 40 39 04 Long 74 03 55	Black	S. S. S	Subsail	Debitful
274	"	3/4 mile south of Robbins Reef light	Lat 40 39 50 Long 74 04 09		Oily	Sand	Debitful
275	"	3000 feet southwest of Robbins Reef light	Lat 40 39 04 Long 74 04 22			Gravel	Debitful
276	"	3000 feet south of Robbins Reef light	Lat 40 39 27 Long 74 04 06			Sand	Debitful
277	"	7/8 mile south of Robbins Reef light	Lat 40 39 39 Long 74 03 53			Sand	Debitful

En. 98, P. 20

Examination of Deposits from the Harbor Bottom, Chesebrough Creek.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth of water (Feet)	Color	Char- acter	Consist- ency	Opinion	Bottom per sq yd
		Approximate	Exact						
278	Mar. 30, 1929	Chesebrough Creek, Lawrence Harbor, N.J.	Lat 40 27 30 Long 74 16 00	2	Gray	Marshy	Clay	Unpolluted	15,000
279	"	Chesebrough Creek, Lawrence Harbor, N.J.	Lat 40 27 30 Long 74 16 00	2	Gray	Marshy	Clay	Unpolluted	9,000

Ex. 92, P. 21

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam. sta- tion No.	Date of collec- tion	Location of Samples	Depth of water		Color	Odor	Consist- ency	Opinion
		Approximate	Exact	"				
280	Mar. 23, 1909	3300 feet off Owl Head	Lat 40 38 27	40	Black		Clay	Polluted
281	"	800 feet north of 71st St.	Long 74 38 56					
282	"	sewer, 600 ft. off shore	Lat 40 38 23	40	Brown	H ₂ S	Subsoil	Polluted
		1800 feet from Brooklyn	Long 74 02 17					
		shore midway between Bliss	Lat 40 38 21	40	Black		Clay	Polluted
		tower and 71st St. sewer	Long 74 02 34					
283	Mar. 24,	2800 feet northwest of Owl	Lat 40 38 45	25	Black	Oily	Subsoil	Doubtful
	"	Head bell buoy	Long 74 03 41					
284	"	2600 feet southwest of Owl	Lat 40 38 40	25	Black	Oily	Subsoil	Polluted
	"	Head bell buoy	Long 74 03 41					
285	"	2100 feet northwest of Owl	Lat 40 38 39	25	Black	Oily	Subsoil	Polluted
	"	Head bell buoy	Long 74 03 34					
286	"	2200 feet northwest of Owl	Lat 40 38 40	25	Black	Oily	Subsoil	Polluted
	"	Head bell buoy	Long 74 03 28					
287	"	1200 feet north of Owl Head	Lat 40 38 36	30			Sludge	
	"	bell buoy	Long 74 03 28				sand	
289	"	900 feet north of Owl Head	Lat 40 38 22	30			Sand	Polluted
	"	bell buoy	Long 74 03 17				Gravel	
290	"	1300 feet northwest of Owl	Lat 40 38 36	30			Sand	Polluted
	"	bell buoy	Long 74 03 41				Gravel	
291	"	1600 feet east of Owl Head	Lat 40 38 24	30	Black		Subsoil	Polluted
	"	bell buoy	Long 74 02 59				clay	
292	"	2200 feet east of Owl Head	Lat 40 38 21	40	Black		Silt	Polluted
	"	bell buoy	Long 74 02 50				sand	
293	"	2100 feet east of Owl Head	Lat 40 38 24	40	Black		Silt	Polluted
	"	bell buoy	Long 74 01 51				sand	

Ex. 98, P. 22

Examination of Deposits from the Harbor Bottom Upper Bay.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion
		Approximate	Exact " "					
294	Mar. 24, 1909	2700 feet east of Owl Head bell buoy	Lat 40 38 24 Long 74 02 43	40	Black		Silt sand	Polluted
295	"	2800 feet east of Owl Head bell buoy	Lat 40 38 20 Long 74 02 41	40			Silt sand	Polluted
296	"	3200 feet east of Owl Head bell buoy	Lat 40 38 24 Long 74 02 37	40	Black	Oily	Silt sand	Polluted
297	"	4200 feet east of Owl Head bell buoy	Lat 40 38 26 Long 74 02 26	40	Black		Sand clay	Polluted
298	"	600 feet off Owl Head	Lat 40 38 27 Long 74 02 19	40	Black		Sand clay	Polluted
299	"	700 feet off Owl Head	Lat 40 38 18 Long 74 02 30	40	Black		Subsoil	Polluted

Ex. 98. P. 23

Examination of Deposits from the Harbor Bottom, Upper Bay.

Examination No.	Date of collection.	Location of Samples		Exact depth of water	Depth of water	Color	Odor	Consistency	Opinion	Bacteria per gram
		Approximate								
300	Mar. 27, 1909	4000 ft. west of Robbins Reef, light	Lat 40 39 33 Long 74 04 43	8	8	Black	-	Sub-soil	Unpolluted	900,000
301	"	5000 ft. west of Robbins Reef, light	Lat 40 39 30 Long 74 05 02	6	6	"	"	"	"	950,000
302	"	4500 ft. west of Robbins Reef, light	Lat 40 39 25 Long 74 04 57	6	6	"	"	Oily	"	1,100,000
303	"	4000 ft. west of Robbins Reef, light	Lat 40 39 22 Long 74 04 51	5	5	"	"	"	Doubtful	740,000
304	"	3600 ft. west of Robbins Reef, light	Lat 40 39 21 Long 74 04 46	5	5	"	"	"	Polluted	850,000
305	"	3000 ft. southwest of Robbins Reef, light	Lat 40 39 18 Long 74 04 37	20	20	"	"	"	"	640,000
306	"	2700 ft. southwest of Robbins Reef, light	Lat 40 39 17 Long 74 04 31	20	20	"	"	"	Unpolluted	690,000
307	"	2200 ft. southwest of Robbins Reef, light	Lat 40 39 17 Long 74 04 24	20	20	"	"	"	Polluted	1,000,000
308	"	1800 ft. southwest of Robbins Reef, light	Lat 40 39 18 Long 74 04 17	20	20	"	"	"	Unpolluted	770,000
309	" 29,	1200 ft. southwest of Robbins Reef, light	Lat 40 39 23 Long 74 04 15	40	40	"	"	Sand	"	160,000
310	"	1000 ft. southwest of Robbins Reef, light	Lat 40 39 18 Long 74 04 08	40	40	"	"	Silt	Doubtful	670,000
311	"	1600 ft. south of Robbins Reef, light	Lat 40 39 11 Long 74 04 06	70	70	"	"	Sand	Unpolluted	"
312	"	2800 ft. south of Robbins Reef, light	Lat 40 38 53 Long 74 03 56	30	30	"	"	Silt	Polluted	450,000
313	"	3200 ft. south of Robbins Reef, light	Lat 40 38 55 Long 74 03 51	40	40	"	"	Sand	"	720,000
314	"	1800 ft. south of Robbins Reef, light	Lat 40 38 59 Long 74 03 48	70	70	Black	"	Sub-soil	"	840,000
315	"	2200 ft. southeast of Robbins Reef bell buoy	Lat 40 38 55 Long 74 03 39	50	50	"	"	Clay	"	630,000

Examination of Deposits from the Harbor Bottom, Upper Bay.

Examination No.	Date of collection.	Location of Samples Approximate	Exact Loc.	Depth of water	Color	Consistency	Odor	Opinion	Bacteria per gram.
316	Feb. 29, 1909	2600 ft. Southeast of Red-bine Reef bell buoy	Lat 40 38 52 Long 74 03 20	50	Black	-	Clay	Polluted	660,000
317	"	2500 ft. North of Owl Head bell buoy	Lat 40 38 52 Long 74 03 10	38	"	Oily	"	"	1,200,000
318	"	2600 ft.	Lat 40 38 52 Long 74 03 06	38	"	"	"	"	1,600,000
319	"	2900 ft.	Lat 40 38 52 Long 74 03 10	38	"	"	"	"	940,000
320	"	2600 ft.	Lat 40 38 47 Long 74 03 02	38	"	"	Sand	"	180,000
321	"	2800 ft. Northeast of Owl Head bell buoy	Lat 40 38 44 Long 74 02 53	30	"	Oily	Silty	"	320,000
322	"	3000 ft. off shore at Owl Head, Brooklyn	Lat 40 38 40 Long 74 02 43	40	"	"	Sand	"	240,000
323	"	2400 ft.	Lat 40 38 39 Long 74 02 36	40	"	"	Silty	"	440,000
324	"	1800 ft.	Lat 40 38 36 Long 74 02 27	40	Black	-	Sand	"	840,000
325	" 30.	Line from 71 St. Sewer to St. George 300 ft. off shore	Lat 40 38 14 Long 74 02 17	40	"	Oily	Sand	"	6,400,000
326	"	100 ft. " "	Lat 40 38 14 Long 74 02 26	40	"	"	Sand	"	1,600,000
327	"	Opposite 71st St.oklyn.	Lat " " "	40	Brown	-	Sub-soil	"	5,300,000
328	"	About 800 ft. off Bay Ridge	Lat 40 38 09 Long 74 02 30	40	Brown	-	Sub-soil	"	1,100,000
329	"	" 900 ft.	Lat 40 38 22 Long 74 02 28	40	"	"	Sub-soil	"	900,000
330	"	1800 ft.	Lat 40 38 17 Long 74 02 36	40	"	Oily	Sub-soil	"	280,000
331	"	2400 ft.	Lat 40 38 16 Long 74 02 43	40	"	"	Sub-soil	"	1,000,000

Ex. 98. P. 28

Examination of Deposits from the Harbor Bottom, Upper Bay.

Examination No.	Date of Collection	Location of Samples		Depth of water	Color	Odor	Consist.	Opinion	Bacteria per cubic foot
		Approximate	Exact						
332	Nov. 30, 1909	2600 ft. off Bay Ridge	Lat 40 39 17 Long 74 02 40	40	-	-	Silt sand	Poluted	600,000
333	"	"	Lat 40 39 21 Long 74 02 54	40	Black	Oily	Sand	"	2,400,000
334	"	"	Lat 40 39 20 Long 74 03 02	40	-	-	clay	"	4,200,000
335	"	"	Lat 40 39 21 Long 74 03 14	25	-	-	silt	"	3,200,000
336	"	"	Lat 40 39 24 Long 74 03 26	35	Black	-	silt	Doubtful	2,100,000
337	"	"	Lat 40 39 28 Long 74 03 32	35	Black	Oily	clay	"	460,000
338	"	"	Lat 40 39 32 Long 74 03 44	40	"	"	"	"	380,000
339	"	"	Lat 40 39 34 Long 74 03 50	40	-	-	hard	"	460,000

Ex. 98, P. 26

Examination of Deposits From the Harbor Bottom, Hudson River.

Bacteri- o- logi- cal No.	Date of collec- tion	Location of Samples		Depth of water	Opinion	Bacteria per gram
		Approximate	Exact			
340	Apr. 12, 1909	Breakwater at Pier 6 N.Y.	Lat 40 41 16 Long 74 01 08	80	-	-
341	"	Along 1800 N. ave. the S.W. corner of Pier 6	Lat 40 41 16 Long 74 01 08	80	Black oily silt with gravel	Scrubbed

Ex. 86. B. 27

Examination of Impetria from the Harbor Bottom, Hempstead Bay.

Examine- tion No.	Date of collec- tion	Location of Sample		Depth in Feet	Color (Mar. Consist.)	Optical Density	Lentoria per Area
		Approximate	Exact				
342	Apr. 8, 1909	200 ft. back of house of John L. Lawrence	Lat 40 37 00 Long 73 42 00	4	0.0	Brown Marshy Clay Unpolluted	48,000
343	"	"	Lat 40 39 00 Long 73 42 00	4	0.6	Black Marshy "	80,000
344	"	"	Lat 40 37 00 Long 73 42 00	4	0.0	Brown Marshy "	80,000
345	"	300 feet farther out	Lat 40 37 00 Long 73 42 00	4	0.6	Black Marshy "	88,000
346	"	"	Lat 40 39 00 Long 73 42 00	4	0.0	Brown Marshy "	42,000
347	"	"	Lat 40 37 00 Long 73 42 00	4	0.6	Black Marshy "	Unpolluted 12,000
348	"	"	Lat 40 39 00 Long 73 42 00	4	0.0	Brown Marshy "	80,000
349	"	"	Lat 40 37 00 Long 73 42 00	4	0.7	Gray Marshy "	Doubtful 19,000

Mr. Geo. D. 89

Examination of Deposits from the Harbor Bottom. Pelham Bay.

Exam- ation No.	Date of collec- tion	Location of Samples		Depth in feet	Opinion	Bacteria per gram
		Approximate	Exact Loc.			
360	Apr. 5, 1909	Shore of Pelham Bay Park 600 ft. W. of Bathing Beach	Lat 40 52 12 Long 73 48 18	3 0	Brown - Sand	Unpolluted 1,000
361	"	"	Lat 40 52 12 Long 73 48 18	3 0.5	"	" 1,000
362	"	Shore of Pelham Bay Park 300 ft. E. of Bathing Beach	Lat 40 52 02 Long 73 48 18	3 0	Brown - Clay	" 53,000
363	"	"	Lat 40 52 02 Long 73 48 18	3 0.5	Brown - "	" 8,000
364	"	Extreme west end of same inlet near Bartow's Station	Lat 40 52 13 Long 73 48 34	3 0.0	"	" 80,000
365	"	Same as 364	Lat 40 52 13 Long 73 48 24	3 0.5	"	" 9,000

Ex. 98. P. 29

Examination of Deposits from the Harbor Bottom. Long Island Sound.

Exam- ination No.	Date of collec- tion	Location of Deposit		Depth of water fath	Color	Consist- ency	Opinion Bacteria per Gram
		Approximate	Exact				
356	Apr. 13, 1909	Greenpoint Harbor at oyster beds	Lat 41 06 00 N Long 72 21 05 E	18	Yellow	Sand	Deposited 4,0000

Ex. 94. P. 30

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam- ation No.	Date of collec- tion	Location of Samples		Depth of water Feet	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
357	Apr. 17, 1909	From 79 St. Sewer to Tom- pkinsville, 650 ft. out from sewer	Lat 40 37 35 Long 74 02 28	30	Black	Oily	sub-soil	Polluted
358	"	" 300 ft. off 79 St. Brook- lyn	Lat 40 37 51 Long 74 02 33	30	"	"	sludge sand	"
359	"	" 800 ft. "	Lat 40 37 54 Long 74 02 39	30	"	"	silty sand	"
360	"	" 1400 ft. "	Lat 40 37 55 Long 74 02 45	40	"	"	"	"
361	"	" 2400 ft. "	Lat 40 37 58 Long 74 02 56	40	"	"	"	"
362	"	" 3000 ft. "	Lat 40 38 01 Long 74 03 03	40	"	"	"	"
363	"	" 2800 ft. "	Lat 40 38 03 Long 74 02 59	40	"	Oily	sludge clay sand	"
364	"	" 3500 ft. "	Lat 40 38 02 Long 74 03 11	40	"	"	silt sand	"
365	"	" 4000 ft. "	Lat 40 38 05 Long 74 03 17	50	"	Oily	sand	Doubtful
366	"	" 500 ft. west of Owl Head bell buoy	Lat 40 38 18 Long 74 03 22	35	"	"	silty sand	Polluted
367	"	" 4000 ft. off Tompkins ville, S.I.	Lat 40 38 12 Long 74 03 37	45	Brown	"	sub-soil	"
368	"	" 2400 ft. "	Lat 40 38 20 Long 74 03 55	55	"	"	sand	Unpolluted
369	"	" 100 ft. off Pier 1 Staten Island	Lat 40 38 23 Long 74 04 12	35	"	Oily	gravel	Polluted

Ex. 98, p. 31

Examination of Deposits from the Harbor Bottom. Long Island Sound.

Examination No.	Date of collection	Location of Samples		Depth of water feet	Color	Odor	Consist.	Opinion	Bacteria per gram
		Approximate	Exact						
370	Apr. 13, 1909	Gardener's Bay near Orient Point	Lat 41 09 00 Long 73 12 30	30	Brown	-	Clay	Unpolluted	3,000
371	"	1/2 mile off Roncke Pt.	Lat 41 00 30 Long 72 42 00	35	"	-	"	"	6,000
372	"	1/2 mile off Wed- dville Landing	Lat 40 59 50 Long 72 42 46	35	Gray	-	"	"	5,000
373	"	Port Jaffers Har- bor just inside breakwater	Lat 40 57 00 Long 73 05 00	20	"	-	"	"	35,000
374	" 15	1/2 mile off Eaton's Point	Lat 40 59 30 Long 73 22 30	55	"	-	"	"	16,000
375	"	1 mile off Lloyd's Point	Lat 40 57 45 Long 73 19 10	45	"	-	"	"	15,000
376	"	1 mile off Center Is. Point	Lat 40 56 30 Long 73 23 00	35	"	-	sand clay	"	17,000
377	"	1 mile off Matini- cock Point	Lat 40 55 20 Long 73 36 25	55	"	-	"	"	25,000
378	"	1 mile off Prospect Point	Lat 40 52 45 Long 73 44 25	50	"	-	"	"	15,000
379	"	Westchester Bay, near City Is.	Lat 40 50 00 Long 73 47 30	15	"	-	"	"	50,000
380	"	300 ft. east of Throgs Neck	Lat 40 48 20 Long 73 47 50	25	"	-	"	"	140,000

Ex. 78, P. 32

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam- i- n- a- t- i- o- n No.	Date of collec- tion	Location of Samples		Depth of water feet	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
361	Apr. 21, 1909	600 ft. from Crescent Club	Lat 40 37 39	40	Black	-	sludge	Polluted
362	"	"	Long 74 08 40	40	"	Oily	sub-soil	"
363	"	2100 ft. "	Lat 40 37 43	70	"	"	sand	"
364	"	2100 ft. "	Long 74 02 47	70	"	"	"	Doubtful
365	"	3000 ft. "	Lat 40 37 36	70	"	"	"	"
366	"	3000 ft. "	Long 74 02 56	70	"	"	sand	"
367	"	3000 ft. "	Lat 40 37 37	70	"	"	silt	"
368	"	3000 ft. "	Long 74 03 12	70	"	"	sand	"
369	"	Midstream, opposite Cres- cent Club, Brooklyn	Lat 40 37 37	80	"	"	sand	Unpolluted
370	"	3000 ft. out from Tompkin- sville, S.I.	Long 74 03 22	60	Black	"	sub-soil	Polluted
371	"	2400 ft. "	Lat 40 37 42	60	"	"	"	"
372	"	1100 ft. "	Long 74 03 36	60	"	"	sludge	"
373	"	1100 ft. "	Lat 40 37 40	60	"	"	"	"
374	"	1100 ft. "	Long 74 03 50	60	"	"	clay	"
375	"	1100 ft. "	Lat 40 37 43	60	"	"	"	"
376	"	1200 ft. out from Staple- ton, S.I.	Long 74 03 59	60	Gray	Oily	clay	Unpolluted
377	"	800 ft. out from "	Lat 40 37 50	60	Black	"	sludge	Polluted
378	"	400 ft. off shore nearly opposite St. Brooklyn	Lat 40 37 51	40	"	"	clay	"
379	"	1600 ft. "	Long 74 04 21	30	"	Oily	sludge	"
380	"	1600 ft. "	Lat 40 37 56	30	"	"	sand	"
381	"	1600 ft. "	Long 74 02 36	70	"	"	"	"
382	"	1600 ft. "	Lat 40 37 26	70	"	"	"	"
383	"	1600 ft. "	Long 74 02 46	70	"	"	"	"
384	"	1600 ft. out from Crescent Club, Brooklyn.	Lat 40 37 29	70	"	"	"	Unpolluted
385	"	Midstream opposite Cres- cent Club, Brooklyn.	Long 74 02 58	80	"	"	silt	"
386	"	"	Lat 40 37 32	80	"	"	sand	"
387	"	"	Long 74 03 07	80	"	"	"	"
388	"	"	Lat 40 37 37	80	"	"	"	Polluted
389	"	"	Long 74 03 22	80	"	"	"	"

Ex. 96. P. 35

Remediation of Impacts from the Harbor Bottom, Upper Bay.

Station No.	Date of collection	Location of Sample		Depth of water, feet	Color	Odor	Consist.	Opinion
		Approximate	Exact					
396	Apr. 24, 1929	About 2000 ft. off 89 St.	Lat 40 37 22 Long 74 02 54	70	-	silty	sludge sand	Polluted
397	"	" Brooklyn, 1500 ft.	Lat 40 37 27 Long 74 02 42	90	-	"	"	"
398	"	" " 1900 ft.	Lat 40 37 23 Long 74 02 16	70	-	"	"	Unpolluted
399	"	" " 2300 ft.	Lat 40 37 32 Long 74 02 37	90	-	"	"	Doubtful
400	"	" " 2100 ft.	Lat 40 37 29 Long 74 02 18	70	-	"	"	"
401	"	" " 2000 ft.	Lat 40 37 30 Long 74 02 00	70	-	"	silty sand	Unpolluted
402	"	" " 2000 ft.	Lat 40 37 33 Long 74 02 09	70	-	"	"	Polluted
403	"	" " 2000 ft.	Lat 40 37 28 Long 74 02 09	70	-	"	"	"
404	"	" Midstream, opposite 89 St. Brooklyn.	Lat 40 37 28 Long 74 02 16	80	-	"	sand	Doubtful
405	"	" About midstream, opposite 69 St. Brooklyn.	Lat 40 37 22 Long 74 02 22	80	-	"	gravel	"
406	"	" About 4500 ft. opposite Pier Canal 50, Staple- ton, S.I.	Lat 40 37 30 Long 74 02 38	60	-	"	sand	"
407	"	" " 4000 ft.	Lat 40 37 34 Long 74 02 33	80	-	"	slay	Polluted
408	"	" " 3500 ft.	Lat 40 37 34 Long 74 02 37	60	black	slay	slay	Doubtful
409	"	" 400 ft. off Canal St. pier, Stapleton, S.I.	Lat 40 37 36 Long 74 02 20	38	"	"	slay	Polluted
410	"	" 450 ft. off 91 St. Brooklyn	Lat 40 37 29 Long 74 02 40	90	-	"	sand	"

Ex. 96, P. 34

Examination of Deposits from the Harbor Bottom, Upper Bay.

Examination No.	Date of collection	Location of Samples		Depth of water, feet	Color	Odor	Consistency	Opinion
		Approximate	Exact					
411	Apr. 24, 1909	1000 ft. off 91 St. Brooklyn	Lat 40 37 10 Long 74 02 46	70	-	Oily	Sand	Polluted
412	"	"	Lat 40 37 39 Long 74 02 49	70	Black	"	Sludge Clay	"
413	"	"	Lat 40 37 10 Long 74 02 52	70	-	-	Silty Sand	"
414	"	"	Lat 40 37 10 Long 74 02 50	70	-	-	"	"
415	"	"	Lat 40 37 07 Long 74 02 50	80	-	-	Sand	Unpolluted
416	"	Midstream opposite 91 St. Brooklyn	Lat 40 37 10 Long 74 03 10	40	-	Oily	Silty Sand	Polluted
417	"	About 1/2 mile off 91 St. Brooklyn	Lat 40 37 12 Long 74 03 03	70	-	-	"	Unpolluted
418	"	Opposite 99 St. Brooklyn, midstream	Lat 40 37 12 Long 74 03 12	70	-	-	Sand	Polluted
419	"	About 1800 ft. off Staten Is. shore up-posite Clifton	Lat 40 37 12 Long 74 03 28	70	-	-	"	"
420	"	About 1800 ft. out from dock at Clifton S.I.	Lat 40 37 12 Long 74 03 45	70	Black	-	Clay	Unpolluted

Ex. 90, P. 35

Examination of Deposits from the Harbor Bottom, Hudson River.

Examination No.	Date of collection	Location of Sample		Depth of water feet	Color	Odor	Consistency	Opinion
		Approximate	Exact					
421	May 3, 1909	50 ft. off New Jersey shore opposite Riverdale	Lat 40 54 25 Long 73 55 58	15	Brown Black	-	Clay	Unpolluted
422	"	900 ft. "	Lat 40 54 22 Long 73 56 44	20	Brown Black	-	"	"
423	"	1 mile off New Jersey shore opposite Riverdale	Lat 40 54 21 Long 73 56 37	30	"	-	"	"
424	"	3/9 " "	Lat 40 54 20 Long 73 55 31	36	Black	-	Sub-soil	"
425	"	Midstream opposite Riverdale	Lat 40 54 18 Long 73 55 24	35	Gray	-	"	"
426	"	2300 ft. off shore Riverdale	Lat 40 54 17 Long 73 55 20	40	Black	-	"	"
427	"	1800 ft. off shore Riverdale	Lat 40 54 17 Long 73 55 16	40	-	-	Sand	"
428	"	1200 ft. off shore Riverdale	Lat 40 54 15 Long 73 55 09	45	Black	-	Gravel Clay	Doubtful
429	"	About 200 ft. out from Riverdale dock	Lat 40 54 12 Long 73 54 57	20	Black	-	"	"

Ex. 98. P. 36

Examination of Deposits from the Harbor Bottom, The Narrows.

Exam- ination No.	Date of collec- tion	Location of Samples		Exact Depth of water fath	Color	Odor	Consist- ency	Opinion
		Approximate	Exact					
430	May 5, 1909	About 500 ft. out from dock above Ft. Lafayette	Lat 40 36 52 Long 74 02 35	40	Black	-	Sludge Clay	Polluted
431	"	" 800 ft.	Lat 40 36 52 Long 74 02 40	40	-	-	Silty sand	"
432	"	" 1300 ft.	Lat 40 36 46 Long 74 02 47	60	Black	-	Sludge Clay	"
433	"	" 1400 ft.	Lat 40 36 49 Long 74 02 46	70	-	-	Sand Gravel	"
434	"	" 400 ft.	Lat 40 36 52 Long 74 02 39	40	Gray	-	Sand Clay	"
435	" 6.	Midstream opposite Quarantine Station	Lat 40 36 52 Long 74 03 00	80	-	-	Sandy Clay	"
436	"	About 1/2 mile opposite Quarantine Station	Lat 40 36 50 Long 74 02 54	80	-	-	"	"
437	"	About 300 ft. off Staten Island shore 500 ft. N. of Quarantine	Lat 40 36 45 Long 74 03 39	80	Black Oily	Sludge Sub-soil		Beneficial
438	"	" 1000 ft.	Lat 40 36 47 Long 74 03 29	80	"	-	"	"
439	"	" 1600 ft.	Lat 40 36 47 Long 74 03 20	50	-	Oily	Silt Sand	"
440	"	About 1/2 mile off Quarantine Station	Lat 40 36 42 Long 74 03 09	50	-	-	Sand	Unpolluted
441	"	About 3/4 mile off Staten Is. shore 500 ft. N. of Quarantine Station	Lat 40 36 49 Long 74 03 16	50	-	-	Silty Sand	Polluted
442	"	About 3/4 mile off Quarantine Station	Lat 40 36 47 Long 74 03 19	80	-	-	Sand Gravel	"
443	"	About 1/2 mile off Quarantine Station	Lat 40 36 55 Long 74 02 56	80	-	-	"	"

Ex. 98. P. 37

Examination of Deposits from the Harbor Bottom, The Narrows.

Examination No.	Date of collection	Location of Samples	Approximate	Depth of water		Color	Odor	Consistency	Opinion
				Exact	Feet				
444	May 7, 1909	Narrows, Opposite Quarantine Station about midstream		Lat 40 36 59 Long 74 03 01	80	-	Oily	Sand	Polluted
445	"	About 1000 ft. off Ft. Wadsworth		Lat 40 36 21 Long 74 03 10	80	Gray	-	Clay	"
446	"	" " 1800 ft.		Lat 40 36 28 Long 74 03 08	80	"	Oily	Sub-soil	"
447	"	About 3/8 mile off Ft. Wadsworth		Lat 40 36 28 Long 74 02 56	80	-	"	Sand	"
448	"	Midway between Ft. Wadsworth and Ft. Lafayette		Lat 40 36 27 Long 74 02 50	80	Brown	-	Sub-soil	"
449	"	About 1/2 mile off Ft. Lafayette		Lat 40 36 30 Long 74 02 41	80	"	Oily	Sludge	"
450	"	About 900 ft. west of buoy north of Ft. Lafayette		Lat 40 36 35 Long 74 02 37	80	-	"	" clay	"
451	"	About 50 ft. east of buoy north of Ft. Lafayette		Lat 40 36 33 Long 74 02 26	10	Gray	"	Clay	"
452	"	About 2000 ft. off Quarantine pier		Lat 40 36 47 Long 74 03 16	75	-	"	Sand Clay	"

Ex. vs. P. 36

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued)

Exam- ina- tion No.	Date of collec- tion	Location of Samples		Exact S	Depth of Water " " (feet)	Color	Odor	Consist- ency	Opinion
		Approximate							
483	May 7 1909	About 1/2 mile east of Constable Point	Lat 40 39 18 Long 74 04 50	30	Gray			Subsoil	Polluted
484	"	About 1/2 mile northeast of Constable Point	Lat 40 39 25 Long 74 04 42	30	"			Clay	"
485	"	About 7/8 mile northeast of Constable Point	Lat 40 39 23 Long 74 04 35	30	"			"	"
486	"	About one mile northeast of Constable Point	Lat 40 39 39 Long 74 04 26	30	"			"	"

Ex. 98. P. 39

Examination of Deposits from the Harbor Bottom, Newark Bay and Passaic River

Exam- Date of ina- collec- tion No.	Location of Sample Approximate	Exact S. N.	Depth of Water Color	Odor	Consist- ency	Opinion
457	May 8 1909	About 1/3 distance from Shooters Island toward Bergen Point Light	Lat 40 38 39 Long 74 03 13	20	Sand Gravel	Unpolluted
458	"	Lower end of Newark Bay	Lat 40 38 58 Long 74 09 02	20	Oily	Polluted
459	"	On line draw of C.R.N.J. Bridge and bell buoy above, 1000 feet above bridge	Lat 40 39 25 Long 74 08 41	20	" Sludge clay	"
460	"	Nearly halfway between draw of C.R.N.J. Bridge and bell buoy above	Lat 40 39 44 Long 74 08 25	20	" Silt	"
461	"	Newark Bay at bell buoy above C.R.N.J. Bridge	Lat 40 40 10 Long 74 08 06	18	" Sludge clay	"
462	"	Newark Bay near bell buoy above C.R.N.J. Bridge	Lat 40 40 37 Long 74 07 51	16	" Silt	"
463	"	About 3000 feet south of buoy C.3	Lat 40 40 54 Long 74 07 41	12	" Sludge clay	"
464	"	Newark Bay 200 feet east of cen buoy No. 3	Lat 40 41 22 Long 74 07 48	18	"	"
465	"	Newark Bay at cen buoy No. 4	Lat 40 41 38 Long 74 07 26	12	" Sludge sand	"
466	"	About 1300 feet south of buoy N above Lehigh Valley Bridge	Lat 40 42 13 Long 74 07 11	12	"	Doubtful
467	"	As buoy N above Lehigh Valley Bridge	Lat 40 42 26 Long 74 07 11	12	"	Polluted
468	"	Newark Bay 2000 feet below bridge 100 feet off shore N.Y. and Newark	Lat 40 43 04 Long 74 07 21	16	Gray Clay	Unpolluted

Ex. 98. P. 40

Examination of Deposits From the Harbor Bottom, Sewark Bay and Passaic River. (Continued)

Exam. Date of ins. collec- tion	Locality of Samples	Depth of water feet	Color	Odor	Consist- ency	Opinion
469	May 6. 1876 Passaic River 1000 feet above bridge, 60 feet off shore N.Y. and Newark	Lat 40 43 34 Long 74 07 10	15	Gray silty	Sub- silt	Foliated
470	" Passaic River 200 feet above Clark Road bridge, 80 feet off east shore	Lat 40 43 37 Long 74 07 50	18	"	Sludge sand	"
471	" Passaic River 1250 feet above Clark Road bridge upstream	Lat 40 44 06 Long 74 07 00	15	"	Silty sand	"
472	" Sewark Bay near north entrance Clark River	Lat 40 43 00 Long 74 06 37	15	"	Sandy clay	Scattered
473	" At mouth of Hackensack River 2300 feet below bridge	Lat 40 41 53 Long 74 06 37	12	"	"	collected
474	" At mouth of Hackensack River 2000 feet northeast of bay E	Lat 40 42 42 Long 74 06 50	17	Black	"	Sludge clay
475	" Sewark Bay 100 feet south of corner of lake light	Lat 40 39 43 Long 74 10 10	20	Gray	"	Sub- silt
476	" Sewark Bay 100 feet off S.W. corner of Shooters Island	Lat 40 38 17 Long 74 08 20	16	"	"	clay
477	" Sewark Bay 150 feet off S.E. corner of Shooters Island	Lat 40 38 17 Long 74 08 20	30	Black	"	"

En. 90. P. 41

Examination of Deposits from the Harbor Bottom, Hudson River.

Exam- ination No.	Date of collec- tion	Location of Samples	Depth of Enter	Color	Odor	Consist.	Opinion
		Approximate	Feet, "				
476	May 14, 1879	Hudson River 200 feet off Pier 3, Hoboken.	Lat 40 44 16 Long 74 01 18	80	Gray	Silt	Polluted
477	"	Hudson River 200 feet out from 3, Hoboken	Lat 40 44 18 Long 74 01 20	60	"	"	"
480	"	Midstream opposite Christo- pher Street, Manhattan	Lat 40 43 26 Long 74 01 18	40	"	"	Doubtful
481	"	1000 feet off Pier 48, Hudson River, Manhattan	Lat 40 45 27 Long 74 00 50	60	"	Clay	"
485	"	About 600 feet off Pier 44, Hudson River, Manhattan	Lat 40 43 28 Long 74 00 50	80	"	Sand gravel clay	Polluted
483	"	600 feet out from Erie Pier A, Hoboken	Lat 40 45 31 Long 74 01 13	35	Brown	"	Doubtful
484	"	Opposite West 10th Street, Manhattan, 1800 feet off New Jersey Shore	Lat 40 45 26 Long 74 01 00	35	"	"	Unpolluted
485	"	2800 feet off West 33rd St., Manhattan	Lat 40 45 40 Long 74 00 49	40	"	"	Doubtful
486	"	1800 feet off West 33rd St., Manhattan	Lat 40 45 34 Long 74 00 37	40	Gray	"	Unpolluted
487	"	200 feet off West 33rd St., Manhattan	Lat 40 45 30 Long 74 00 39	40	"	"	"
488	"	Opposite West 72nd St., Manhattan, 1000 feet off New Jersey shore	Lat 40 47 07 Long 73 59 53	75	"	Sand gravel silt	Polluted
489	"	2400 feet off West 74th St., Manhattan	Lat 40 47 00 Long 73 59 39	40	"	"	"
490	"	Midstream opposite West 72nd St., Manhattan	Lat 40 47 02 Long 73 59 42	40	"	"	"
491	"	1000 feet from 72nd St., Pier, Manhattan, Hudson River	Lat 40 46 59 Long 73 59 30	45	"	"	Unpolluted

Ex. 98, P. 42

Examination of Deposits from the Harbor Bottom, Hudson River. (Continued)

Exam- ina- tion No.	Date of collec- tion	Location of Samples		Depth of Water (feet)	Color	Odor	Consist- ency	Opinion
		Exact	General					
492	May 14, 1909	900 feet from 72nd St., Pier, Manhattan, Hud- son River	Lat 40 46 57 Long 73 59 29	40	Gray		Clay	Polluted
492	"	300 feet from 72nd St., Pier, Manhattan, Hud- son River	Lat 40 46 54 Long 73 59 23	35	Black	Oily	Sludge sub-soil	"
494	May 14, 1909	Opposite W. 96th St. Man- hattan, 500 feet off New Jersey shore	Lat 40 48 10 Long 73 59 25	15	Gray	"	Sub- soil	Doubtful
495	"	Opposite W. 96th St. Man- hattan, 1500 feet off New Jersey shore	Lat 40 48 04 Long 73 59 13	20	"	"	"	"
496	"	Midstream opposite W. 96th St., St. Manhattan	Lat 40 48 00 Long 73 59 03	50	"	"	"	Polluted
497	"	1400 feet off Pier W. 96th St. Manhattan	Lat 40 47 55 Long 73 58 53	50	Brown		"	"
498	"	300 feet off Pier W. 96th St. Manhattan	Lat 40 47 50 Long 73 58 40	40	"		Clay	Doubtful
499	"	300 feet off West shore Opposite Ft. Washing- ton Point	Lat 40 51 07 Long 73 57 32	12	Gray Yellow		"	Unpolluted
500	"	Opposite Ft. Washington Point about 1/3 distance from west shore	Lat 40 51 05 Long 73 57 21	20	Gray Yellow		"	Doubtful
501	"	Opposite Ft. Washington Point about 2/3 across from west shore	Lat 40 51 03 Long 73 57 05	45	Black Yellow		"	"
502	"	400 feet out from Ft. Washington Point	Lat 40 51 02 Long 73 56 56	80			Rock	

Ex. 98. P. 43

Examination of Deposits from the Harbor Bottom, Lower Bay.

Exam- ina- tion No.	Date of collec- tion	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact						
503	May 17 1909	By Gas buoy S 2, near Coney Is.	Lat 40 34 00 Long 73 59 20	20	Black		Mud	Unpolluted	1,400,000
504	"	About 3/4 mile south of buoy 32, off Coney Is.	Lat 40 33 26 Long 73 59 25	15	Brown		Sand	Unpolluted	2,400
506	"	About 1 mile south of buoy 32, off Coney Is.	Lat 40 33 10 Long 73 59 30	15	Brown		Sand	Unpolluted	1,200
507	"	About 1 1/2 miles south of buoy S 2, off Coney Island	Lat 40 32 45 Long 73 59 40	15	Brown		Sand	Unpolluted	800
508	"	About 7/8 mile north of A C buoy 14	Lat 40 32 10 Long 73 59 35	20	Brown		Sand	Unpolluted	1,200
509	"	About 3/8 mile north of A C buoy 14	Lat 40 31 45 Long 73 59 35	20	Brown		Sand	Doubtful	1,400
510	"	1000 feet N.-W. of AC buoy No. 12	Lat 40 31 15 Long 73 59 10	20	Brown		Sand	Unpolluted	2,200
511	"	50 feet N. of A.C. buoy No. 12	Lat 40 31 05 Long 73 59 05	15	Brown		Sand	Unpolluted	900
513	May 18 1909	In Ambrose Channel 100 feet south of A C buoy No. 12	Lat 40 31 00 Long 73 59 00	40	Gray		Sand	Unpolluted	1,900
514	"	Midway between buoys A C 12 and N. E. 2	Lat 40 30 10 Long 73 58 40	20	Brown		Sand	Unpolluted	
515	"	100 feet north of N. B. buoy 2	Lat 40 29 30 Long 73 58 25	20	Brown		Sand	Unpolluted	1,200
516	"	100 feet south of N. B. buoy 2 Main Channel	Lat 40 29 25 Long 73 58 25	35	Brown		Sand	Unpolluted	
517	"	100 feet south of buoy N E 1/2 Main Channel	Lat 40 29 10 Long 73 59 20	40	Brown		Sand	Unpolluted	2,400

Ex. 98. P. 44

Examination of Deposits from the Harbor Bottom, Lower Bay.

Exam- ination No.	Date of Collection	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact						
518	May 18 1909	100 feet south of buoy E 4 Main Channel	Lat 40 29 00 Long 74 00 20	40	Brown		Sand	Unpolluted	
519	"	100 feet south of buoy E 6 Main Channel	Lat 40 29 00 Long 74 00 40	50	Brown		Sand	Unpolluted	1,400
520	"	100 feet south of buoy E 8 Main Channel	Lat 40 28 45 Long 74 01 20	40	Brown		Sand	Unpolluted	
521	"	100 feet south of buoy E 10 Main Channel	Lat 40 28 35 Long 74 02 05	40	Brown & Black		Sand	Unpolluted	50,000
522	"	100 feet south of buoy E 12 Main Channel	Lat 40 28 40 Long 74 02 40	35	Gray		Sand Mud	Unpolluted	
523	"	100 feet west of buoy NC 2 Main Channel	Lat 40 32 10 Long 74 02 45	35	Gray		Mud	Polluted	600,000
524	"	100 feet west of buoy NC 4 Main Channel	Lat 40 32 40 Long 74 02 40	35	Gray		Mud	Polluted	
525	"	100 feet west of buoy NC 6 Main Channel	Lat 40 30 10 Long 74 02 40	35	Gray		Mud	Polluted	1,250,000
526	"	100 feet west of buoy NC 8 Main Channel	Lat 40 30 40 Long 74 02 35	35	Gray		Mud	Polluted	
527	"	100 feet west of buoy E Main Channel	Lat 40 31 15 Long 74 02 30	35	Gray		Sand Mud	Polluted	1,800,000
528	"	100 feet east of buoy C 9 Main Channel	Lat 40 32 00 Long 74 02 25	35	Gray		Mud	Polluted	
529	"	100 feet east of buoy C 9 1/2 Main Channel	Lat 40 33 00 Long 74 02 25	35	Gray		Mud	Polluted	2,400,000
530	"	100 feet east of buoy 11 Main Channel, Lower Bay	Lat 40 34 05 Long 74 02 40	40	Gray		Sand Mud	Doubtful	
531	"	50 feet east of Craven Shoal buoy	Lat 40 35 05 Long 74 02 30	50	Gray		Sand Mud	Doubtful	4,900,000

Ex. 98, 2. 45

Examination of Deposits from the Harbor Bottom, Lower Bay.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion	Bacteria per Gram
		Approximate	Exact						
532	May 19 1909	500 feet west of Craven	Lat 40 35 40 Long 74 02 35	30	Gray	Mud	Mud	Polluted	1,200,000
533	"	Shoal buoy flagstaff	Lat 40 35 00 Long 74 04 50	10	Gray	Sand	Sand	Doubtful	
534	"	South Beach S. I.	Lat 40 34 15 Long 74 04 15	15	Gray	Mud	Mud	Unpolluted	600,000
535	"	About 1 1/4 miles west of Swinburne Island	Lat 40 34 20 Long 74 04 20	15	Gray	Mud	Mud	Doubtful	
536	"	On line West Bank light and Six Tree Beacon, 1 mile off S. I. shore	Lat 40 32 45 Long 74 05 30	15	Gray	Mud	Mud	Doubtful	1,100,000
537	"	About 2 1/4 miles west of West Bank light	Lat 40 32 00 Long 74 05 00	15	Brown & black	Sand	Sand	Polluted	
538	"	About 1 1/2 miles northeast of Old Greberd Shoal light	Lat 40 32 00 Long 74 05 30	15	Brown & black	Sand	Sand	Polluted	600,000
539	"	About 3/4 mile north- east of Old orchard Shoal light	Lat 40 31 30 Long 74 05 40	20	Brown & black	Sand	Sand	Unpolluted	
540	"	100 feet north of Old Orchard light	Lat 40 30 50 Long 74 05 50	23	Gray	Mud	Mud	Doubtful	600,000
541	"	100 feet north of buoy "cable 2 & 4" far- thest north, Lower Bay	Lat 40 29 25 Long 74 06 15	25	Gray	Mud	Mud	Doubtful	
542	"	100 feet north of buoy "cable 2 & 4" far- thest south, Lower Bay	Lat 40 29 40 Long 74 06 30	15	Brown black	Sand	Sand	Unpolluted	140,000
		200 feet south of buoy S. I. W. Lower Bay	Lat 40 29 40 Long 74 06 45						

Sta. 98, P. 46

Examination of Deposits from the Harbor Bottom, Lower Bay.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		East 0	Depth of water (feet)	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate								
543	May 19	Railway between Pt. Comfort	Lat 40 27 50	18	Brown	Sand	Unpolluted			4,800
	1909	Beacon and buoy S. 1 W.	Long 74 06 52							
544	"	500 feet south of buoy 1	Lat 40 30 20	18	Gray	Mud	Unpolluted			
		1/2 off Seguin Pt.	Long 74 10 20							
545	"	500 feet south of buoy 8	Lat 40 30 00	20	Gray	Mud	Unpolluted			400,000
		off Seguin Pt.	Long 74 08 48							

Ex. 90. P. 47

Examination of Deposits from the Harbor Bottom. East River.

Examination No.	Date of collection	Location of Sample		Depth in Feet	Color	Odor	Character of Deposit	Opinion
		Approximate	Exact					
846	May 29, 1909	Off spindle light at buoy	Lat 40 47 24	90	Brown	-	Gravel	Unpolluted
847	"	No. 4 Sunken Meadow	Long 73 54 51	60	Brown	-	Sand	Unpolluted
848	"	At buoy No. 7 off Laurens	Lat 40 47 34	60	Brown	-	Sand	Unpolluted
849	"	Point	Long 73 54 31	40	-	-	Sand	-
850	"	At buoy No. 8 off Laurens	Lat 40 47 42	60	-	-	Sand	-
851	"	Point	Long 73 54 19	60	Black Oily	Sludge	Sludge	Polluted
852	"	Midway between buoy 8 and light on E. Brother Is.	Lat 40 47 50	60	Black Oily	Sludge	Sludge	Polluted
853	"	At buoy #3 E of E. Brother Is.	Long 73 54 04	60	Black Oily	Sludge	Sludge	Polluted
854	"	Is. light	Lat 40 48 17	60	Black Oily	Sludge	Sludge	Polluted
855	"	At red buoy 2 1/2 off E. Brother Is.	Long 73 53 40	40	-	Oily	Gravel	Polluted
856	June 8, 1909	1800 feet east from Riber's Is. light	Lat 40 48 09	40	-	-	Gravel	-
857	"	In line Riber's Is. light and Buys Pt. 1/3 dis-	Lat 40 47 57	60	-	-	Sand	-
858	"	In line Riber's Is. light and Buys Pt. 2/3 dis-	Long 73 53 02	75	-	-	Sand	-
859	"	In line Riber's Is. light and Buys Pt. 2/3 dis-	Lat 40 48 01	60	Black	Oily	Sludge	Polluted
860	"	900 feet off Buys Point Is. light	Long 73 52 45	60	Gray	Oily	Clay	Polluted
861	"	Red near buoy No. 2 off Buys Point	Lat 40 48 01	60	Gray	Oily	Sub-	Polluted
862	"	100 ft. from red near buoy	Lat 40 47 59	40	Gray	Oily	Sub-	Polluted
863	"	No. 2 off Buys Point	Long 73 52 26	40	Black	Oily	Sludge	Polluted
864	"	1800 feet north of Riber's Is.	Lat 40 47 45	60	Black	Oily	Sludge	Polluted
865	"	1800 feet north east of Riber's Is.	Long 73 52 05	60	Black	Oily	Sludge	Polluted
866	"	1800 feet north east of Riber's Is.	Long 73 52 00	60	Black	Oily	Sludge	Polluted

Ex. 90, P. 40

Examination of Depositions from the Harbor Bottom. West River.

Name - Date of Collection	Description	Depth in feet		Color	Odor	Consist- ency	Opinion
		0	1				
862	June 8, 1909	2400 feet off ferry slip College Point	Lat 40 47 30 Long 73 51 50	Black	Oil	Sludge	Polluted
863		2000 feet out from ferry slip College Pt. in line with red spar buoy No. Monte Point	Lat 40 47 24 Long 73 51 50	Gray	Oil	Clay	Polluted
864	"	800 feet out from ferry slip College Pt. in line with red spar buoy No. Monte Point	Lat 40 47 18 Long 73 51 40	Gray	Oil	Clay	Polluted
865	"	In bay between ferry slip College Point and N.E. point of College Point	Lat 40 47 23 Long 73 51 33	Gray	Oil	Clay	Polluted
866	"	At black spar buoy #1 off Clausen Point	Lat 40 47 33 Long 73 51 08	-	-	Sludge	Polluted
867	"	1000 feet spar buoy #1 toward Clausen Point	Lat 40 48 03 Long 73 51 08	Black	Oil	Sludge	Polluted
868	"	1000 feet off Clausen Point toward dock	Lat 40 48 08 Long 73 51 08	Black	Oil	Sludge	Polluted
869	"	1000 feet out from trolley dock, Clausen Point	Lat 40 48 11 Long 73 50 48	-	Oil	Silt sand	Polluted
870	"	Midway between Hallman Is. dock and Clausen Pt.	Lat 40 48 04 Long 73 50 40	-	-	Rock	-
871	"	500 feet off Hallman Is. dock	Lat 40 47 54 Long 73 50 27	Gray	-	Clay	Polluted
872	June 7, 1909	1000 feet off Hallman Is. dock	Lat 40 48 00 Long 73 50 16	Gray	Oil	Clay	Polluted
873	"	Midway between Old Ferry Point and Whitestone light	Lat 40 48 10 Long 73 50 10	Gray	Oil	Clay	Polluted

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7330833

Examination of Deposits from the Harbor Bottom. East River.

Examination Number	Date of collection	Location of Samples		Exact	Depth in feet	Color		Odor	Consist-	Opinion
		Approximate				Water				
574	June 7, 1909	1000 feet off Old Ferry Pt. in line with Whitestone light		Lat 40 48 14 Long 73 49 43	90		Gray	Cily	Clay	Polluted
575	"	Half way between White-stone Point and Old Ferry Point		Lat 40 48 10 Long 73 49 33	70		Black	Cily	Sludge	Polluted
576	"	About 2/3 way across from Old Ferry Point to Whitestone light		Lat 40 48 07 Long 73 49 26	80		Black	Cily	Sludge	Polluted
577	"	500 feet off Whitestone light in line with Old Ferry Point		Lat 40 48 04 Long 73 49 17	70		Gray	Cily	Clay	Polluted
578	"	1600 feet off Whitestone Point		Lat 40 48 19 Long 73 49 14	70		Gray	Cily	Clay	Polluted
579	"	2300 feet off Whitestone Point		Lat 40 48 54 Long 73 49 18	90		Gray	Cily	Clay	Polluted
580	"	3000 feet off Whitestone Point		Lat 40 48 31 Long 73 49 11	10		Gray	Cily	Clay	Polluted
581	"	1000 feet off shore from cupula in range with Whitestone light		Lat 40 48 36 Long 73 49 17	70		Gray	-	Clay	Unpolluted

Ex. 95. P. 80.

Examination No.	Date of collection	Location of Samples		Exact	Depth in feet	Color	Odor	Consistency	Opinion
		Approximate	Water						
582	June 8, 1909	1000 feet off Whitestone light in line with Ft. Schuyler light	Lat 40 48 04 Long 73 48 59	50	Gray	Oily	Sub-soil	Polluted	
583	"	2200 feet off Whitestone light in line with Ft. Schuyler light	Lat 40 48 06 Long 73 48 44	50	Gray	Oily	Sub-soil	Polluted	
584	"	3100 feet off Whitestone light in line with Ft. Schuyler light	Lat 40 48 08 Long 73 48 32	50	Gray	Oily	Sub-soil	Polluted	
585	"	4000 feet off Whitestone light in line with Ft. Schuyler light	Lat 40 48 10 Long 73 48 20	40	Gray	Oily	Sub-soil	Polluted	
586	"	3200 feet off Ft. Schuyler light in line with Whitestone light	Lat 40 48 11 Long 73 48 15	50	Gray	Oily	Sub-soil	Polluted	
587	"	2200 feet off Ft. Schuyler light in line with Whitestone light	Lat 40 48 12 Long 73 48 03	50	Gray	Oily	Sub-soil	Polluted	
588	"	500 feet off Ft. Schuyler light in range with Whitestone light	Lat 40 48 16 Long 73 47 42	50	Gray	-	Clay	Polluted	
589	"	From Ft. Schuyler light to Stepping Stones light 1000 feet off shore	Lat 40 48 32 Long 73 47 21	30	-	-	Clay	Unpolluted	
590	"	2600 feet from Ft. Schuyler light in line with Stepping Stones light	Lat 40 48 44 Long 73 47 10	50	-	-	Clay sand	Unpolluted	
591	"	4300 feet from Ft. Schuyler light in line with Stepping Stones light	Lat 40 48 59 Long 73 46 57	50	Gray	-	Clay	Unpolluted	
592	"	1800 feet from Stepping Stones light in line with Ft. Schuyler light	Lat 40 49 15 Long 73 46 42	35	Brown	-	Clay	Unpolluted	
593	"	1000 feet from Stepping Stones light in line with City ls.	Lat 40 49 35 Long 73 46 30	40	-	-	Sand	Unpolluted	
594	"	2000 feet from Stepping Stones light in line with City ls.	Lat 40 49 50 Long 73 46 40	75	Black	MgS	Gravel	Unpolluted	
595	"	3200 feet from Stepping Stones light in line with City ls.	Lat 40 50 00 Long 73 46 40	80	Gray	MgS	Sub-soil	Unpolluted	
596	"	100 feet off west point of City ls.	Lat 40 50 15 Long 73 46 50	25	-	-	Mud	Doubtful	
597	"	700 feet west of Hawkins dock, north side of City ls.	Lat 40 50 25 Long 73 46 40	20	-	-	-	-	
598	"	500 feet off Hawkins dock south side, City ls.	Lat 40 50 35 Long 73 46 40	20	Gray	-	Clay	Unpolluted	

Ex. 98. P. 51.

Examination of Deposits from the Harbor Bottom				Lower Bay	
Examina- tion No.	Date of Collec- tion	Location of Samples		Consis- tency	Opinion
		Approximate	Exact of water Depth feet		
599	June 18, 09	300 feet off U.S.R.R. hook below Sandy Hook light	Lat 40 26 50 Long 74 00 15	Brown	Clay Unpolluted
600	"	Along west shore Sandy Hook	Lat 40 27 10 Long 74 00 25	White	Sand
601	"	Along west shore Sandy Hook	Lat 40 27 20 Long 74 30 35	White	"
602	"	In cove south of U.S.R.R. dock-Sandy Hook	Lat 40 27 45 Long 73 59 55	-	Silty sand
603	"	At spar off S. Beacon light-Sandy Hook	Lat 40 27 40 Long 74 00 35	White	Sand
604	"	1000 feet off dock north of Life Saving Station	Lat 40 27 50 Long 74 00 35	-	Sand

Ex. 98. P. 52

Examination of Deposits from the Harbor Bottom, Eastchester Bay.

Examination No.	Date of collection	Location of Samples		Depth in feet below water	Color	Odor	Consistency	Opinion
		Approximate	Exact					
605	June 14, 1909	200 feet off Oil dock, City Island	Lat 40 50 30 Long 73 47 20	15	Gray	-	Clay	Unpolluted
606	"	2300 feet west of City Island	Lat 40 50 26 Long 73 47 40	15	Gray	-	Clay	Unpolluted
607	"	3600 feet west of City Island	Lat 40 50 20 Long 73 48 00	10	Gray	H ₂ S	Clay	Unpolluted
608	"	4800 feet west of City Island	Lat 40 50 16 Long 73 48 08	12	Gray	H ₂ S	Clay	Unpolluted
609	"	5000 feet west of City Island	Lat 40 50 16 Long 73 48 20	15	Gray	H ₂ S	Clay	Unpolluted
610	"	6000 feet west of City Island	Lat 40 50 10 Long 73 48 26	12	Gray	H ₂ S	Clay	Unpolluted
611	"	About 1 3/4 miles west of City Island 1000 feet off Eastchester shore	Lat 40 50 06 Long 73 48 40	12	Gray	H ₂ S	Clay	Unpolluted
612	"	About 3/4 mile off Eastchester shore	Lat 40 49 50 Long 73 48 20	12	Gray	H ₂ S	Clay	Unpolluted
613	"	About 1800 feet off Eastchester shore	Lat 40 49 20 Long 73 47 58	12	Gray	H ₂ S	Clay	Unpolluted
614	"	About 900 feet off Eastchester shore near Throgs Neck	Lat 40 49 00 Long 73 47 40	12	Gray	-	Clay	Unpolluted

Ex. 98, P. 63.

Examination of Deposits from the Harbor Bottom. Little Neck Bay.

Exam- nation No.	Date of collec- tion	Location of Samples		Exact Locality	Depth in Feet Water	Color	Odor	Consist- ency	Opinion
		Approximate							
618	June 25, 1909	In Little Neck Bay	Lat 40 47 30 Long 73 45 30		0	Black	-	Mud	Unpolluted
616	"	Little Neck cove at S.E. extremity of Little Neck Bay	Lat 40 47 00 Long 73 45 00		0	Black	-	Mud	Polluted
617	"	Mouth of Little Neck Creek	Lat 40 46 00 Long 73 45 00		3	Black	-	Mud	Unpolluted
618	"	In Little Neck Bay	Lat 40 46 30 Long 73 45 30		8	Black	-	Mud	Unpolluted
619	"	In Little Neck Bay, near Willet's Point	Lat 40 46 30 Long 73 45 30		0	Black	-	Mud	Unpolluted
620	"	At mouth of Little Neck Bay	Lat 40 46 00 Long 73 45 30		0	Black	-	Mud	Unpolluted
621	"	At mouth of Little Neck Bay near Willet's Point	Lat 40 47 40 Long 73 46 00		9	Black	-	Mud	Unpolluted

Examination of Deposits from the Harbor Bottom, East River.

Examination No.	Date of collection	Location of Sample		Exact Feet	Depth in Feet	Color	Odor	Consistency	Opinion
		Approximate							
622	Jan. 23 1903	100 feet off dock on Throgs Neck	Lat. 40 48 12 Long 73 47 44	80		Black	-	Med	Unpolluted
623	"	1/4 way across river from Throgs Neck	Lat 40 48 12 Long 73 47 46	80		Black	-	Med	Polluted
624	"	2/4 way across river from Throgs Neck	Lat 40 47 56 Long 73 47 56	70		Black	-	Med	Polluted
625	"	100 feet off dock at West- Narot, Whitestone	Lat 40 47 47 Long 73 48 00	20		-	-	Med	Seabfoi

Examination of Deposits from the Harbor Bottom. Jamaica Bay

Examina- tion Col- lection No.	Date of Collection	Location of Samples Approximate	Depth of Water feet		Color	Odor	Consis- tency	Opinion	Bacter per gram
			Exact	"					
626	June 29, 09	Jamaica Bay 100 feet off dock Belle Harbor Beach channel	Lat 40 34 55 Long 73 51 08	10	Gray	-	Sand	Unpollut-12,000 ed	
627	"	Jamaica Bay 100 feet above drawbridge at Hammels	Lat 40 36 45 Long 73 48 50	10	"	-	Silty sand	"	900,000
628	"	30 feet off foot Baywater Ave. Far Rockaway	Lat 40 36 30 Long 73 46 15	.6	"	-	Clay	"	700,000
629	June 30, 09	Jamaica Bay, At bridge Mor- ton's Creek head of Bay	Lat 40 36 00 Long 73 46 10	10	"	-	Gravel Clay	Doubt- ful	1,000 000
630	"	100 feet off shore opposite Arverne Sta. Jamaica Bay	Lat 40 35 40 Long 73 47 25	4	Black	-	"	Pol- luted	6,000,000
631	"	Jamaica Bay 1000 feet out from Arverne Sta.	Lat 40 36 05 Long 73 47 20	4	"	-	"	Doubt- ful	1,000,000
632	"	Jamaica Bay, Cross Channel off Arverne	Lat 40 35 50 Long 73 48 26	8	Gray	-	"	"	900,000
633	"	Jamaica Bay, creek at foot of Pleasant Ave. Arverne	Lat 40 35 36 Long 73 48 26	8	"	-	Sand clay	"	1,200,000
634	"	Cross Creek along shore near Park Ave. Arverne	Lat 40 35 30 Long 73 48 20	8	-	-	-	Pol luted	2,000,000
635	"	Jamaica Bay 100 feet off foot of Bannister Ave.	Lat 40 35 45 Long 73 48 15	6	Black	-	Clay	"	6,000,000
636	"	Arverne Yard of house near foot of Pleasant Ave.	Lat 40 35 25 Long 73 48 10	3	Gray	-	"	Doubt- ful	250,000
637	July 1, 09	Jamaica Bay, mouth of Fresh Creek	Lat 40 38 30 Long 73 52 55	3	"	-	"	Unpollut- ed	900,000
638	"	Jamaica Bay half way up Fresh Creek	Lat 40 38 50 Long 73 53 20	3	Black	-	"	"	1,200,000

Examination of Deposits from the Harbor Bottom

Jamaica Bay

Examination No.	Date of Collection	Location of Samples		Depth of water, feet	Color	Odor	Consistency	Opinion	Bacteria per gram.
		Approximate	Exact						
639	July 1, 09	Second creek midway between mouth and sewer	Lat 40 39 05 Long 73 53 00	4	-	-	Sludge Pollut-	12,000,000	
640	"	At mouth of Second creek	Lat 40 38 55 Long 73 52 40	4	Black	-	Clay	"	9,000,000
641	"	Jamaica Bay 500 feet off mouth of Second Creek	Lat 40 38 35 Long 73 52 25	6	"	-	Clay	"	1,200,000
642	"	Jamaica Bay 500 feet off mouth of Fresh Creek	Lat 40 38 25 Long 73 52 30	6	"	-	Gravel Sandy clay	"	900,000
643	"	Jamaica Bay 500 feet off shore at Sandy Bay, north of Canarsie	Lat 40 37 50 Long 73 53 05	6	"	-	Clay	"	750,000
644	"	Jamaica Bay Creek running through Canarsie	Lat 40 36 15 Long 73 54 00	6	"	-	"	"	700,000
645	"	Jamaica Bay 100 feet off main landing Canarsie	Lat 40 37 40 Long 73 53 15	8	"	-	"	Unpolluted	120,000
646	"	Half way across Rockaway Inlet	Lat 40 34 15 Long 73 53 55	40	-	-	-	-	5,000

Ex. 98. p. 57

Examination of Deposits from the Harbor Bottom. Hudson River.

Examination No.	Date of collection	Location of Samples		Exact	Depth in feet Water	Color	Odor	Consistency	Opinion
		Approximate							
647	July 7, 1909	Hudson River 100 feet off Mt. St. Vincent Station	Lat 40 54 50 Long 73 54 45	10	Gray	-	Clay	Polluted	
648	"	Hudson River 200 feet off Ludlow Station	Lat 40 55 27 Long 73 54 30	10	Gray	-	Clay	Polluted	
649	"	Hudson River 200 feet off Federal Sugar Plant	Lat 40 55 45 Long 73 54 23	10	Gray	-	Clay	Polluted	
650	"	200 feet off recreation pier Yonkers	Lat 40 56 07 Long 73 54 20	20	Black	Oily	Clay	Polluted	
651	"	Hudson River 200 feet off Spuyten Duyvil Draw-bridge	Lat 40 52 43 Long 73 55 37	20	-	-	Sand	Doubtful	

Ex. 98. p. 58

Examination of Deposits from the Harbor Bottom

Gravesend Bay

Examina- tion Col- lection No.	Date of Collection	Location of Sample Approximate	Exact		Depth of water feet	Color	Odor	Consist- ency	Opinion
			Lat	Long					
652	July 9, 09	Gravesend Bay foot of 22d St. Coney Island	Lat 40 24 48 Long 73 59 26		4	Black	Put- rid	Sludge	Polluted
653	"	Gravesend Bay foot of 24th St. Coney Island	Lat 40 24 44 Long 73 59 23		4	"	"	Foul Sand	"
654	"	Gravesend Bay by the break- water north of entrance to Coney Island	Lat 40 22 00 Long 73 59 30		6	-	-	"	Unpolluted

Ex. 98, P. 59

Examination of Deposits from the Harbor Bottom. Upper Bay.

Examination No.	Date of collection	Location of Samples Approximate	Exact	Depth in Feet Water	Color	Odor	Consistency	Opinion
685	July 15, 1909	150 feet off Greenville shore	Lat 40 41 34 Long 74 04 56	4	Gray	-	Sub-soil	Unpolluted
686	"	200 feet off Greenville shore	Lat 40 41 31 Long 74 04 50	4	Gray	-	Sub-soil	Unpolluted
687	"	300 feet off Greenville shore	Lat 40 41 29 Long 74 04 45	4	Gray	-	Sub-soil	Unpolluted
688	"	400 feet off Greenville shore	Lat 40 41 25 Long 74 04 40	4	Gray	-	Clay	Unpolluted
689	"	500 feet off Greenville shore	Lat 40 41 20 Long 74 04 35	4	Gray	-	Clay	Unpolluted
690	"	600 feet off Greenville shore	Lat 40 41 19 Long 74 04 27	4	Gray	-	Clay	Unpolluted
691	"	700 feet off Greenville shore	Lat 40 41 14 Long 74 04 18	4	Gray	-	Clay	Unpolluted
692	"	1000 feet off Greenville shore	Lat 40 41 06 Long 74 04 04	4	Gray	-	Clay	Unpolluted
693	"	1200 feet off Greenville shore	Lat 40 40 56 Long 74 03 49	4	Gray	-	Clay	Unpolluted
694	"	100 feet off Greenville shore	Lat 40 41 22 Long 74 03 08	4	Gray	-	Clay	Unpolluted
695	"	200 feet off Greenville shore	Lat 40 41 19 Long 74 03 08	4	Gray	-	Clay	Unpolluted
696	"	300 feet off Greenville shore	Lat 40 41 12 Long 74 04 53	4	Gray	-	Clay	Unpolluted
697	"	500 feet off Greenville shore	Lat 40 41 07 Long 74 04 44	4	Gray	-	Clay	Unpolluted
698	"	700 feet off Greenville shore	Lat 40 41 00 Long 74 04 36	4	Gray	-	Clay	Unpolluted
699	"	Near end of P.R.R. docks, Greenville	Lat 40 40 52 Long 74 04 27	"	Gray	-	Clay	Unpolluted
700	"	At the end of P.R.R. docks, Greenville	Lat 40 40 49 Long 74 04 19	20	Gray	-	Clay	Unpolluted

Examination of Deposits from the Barker Bottoms Upper Bay.

Barker Bottoms No.	Date of Collection	Location of Sample	Approximate	Depth in feet		Color	Odor	Consistency	Opinion
				Feet	Feet				
671	July 10, 1909	800 feet off Bayonne shore at Paraiso		Lat 40 40 20	Long 74 06 08	Gray	-	Sub-soil	Unpolluted
672	"	1000 feet off Bayonne shore at Paraiso		Lat 40 40 22	Long 74 06 16	Gray	-	Sub-soil	Unpolluted
673	"	3000 feet off Bayonne shore at Paraiso		Lat 40 40 17	Long 74 06 49	Black	-	Sub-soil	Unpolluted
674	"	2800 feet off Bayonne shore at Paraiso		Lat 40 40 14	Long 74 06 42	Gray	-	Sub-soil	Unpolluted
675	"	3000 feet off Bayonne shore at Paraiso		Lat 40 40 12	Long 74 06 38	Gray	-	Sub-soil	Unpolluted
676	"	4000 feet off Bayonne shore at Paraiso		Lat 40 40 07	Long 74 06 34	Gray	-	Sub-soil	Unpolluted
677	"	5000 feet off Bayonne shore at Paraiso		Lat 40 40 02	Long 74 06 29	Black	-	Sub-soil	Unpolluted
678	"	6000 feet off Bayonne shore at Paraiso		Lat 40 39 59	Long 74 04 59	Gray	-	Sub-soil	Unpolluted
679	"	7000 feet off Bayonne shore at Paraiso		Lat 40 39 40	Long 74 04 46	Black oily	Oily	Sub-soil	Unpolluted
680	"	7800 feet off Bayonne shore at Paraiso		Lat 40 39 42	Long 74 04 42	Black oily	Oily	Sub-soil	Unpolluted
681	"	1000 feet off Bayonne shore at Paraiso		Lat 40 39 35	Long 74 04 34	Black oily	Oily	Sub-soil	Unpolluted
682	"	100 feet off Bayonne shore at Paraiso		Lat 40 40 18	Long 74 06 18	Gray	-	Sub-soil	Unpolluted
683	"	1000 feet off Bayonne shore at Paraiso		Lat 40 40 16	Long 74 06 16	Gray oily	Oily	Sub-soil	Unpolluted
684	"	3000 feet off Bayonne shore at Paraiso		Lat 40 40 10	Long 74 06 10	Black	-	Sub-soil	Unpolluted
685	"	3000 feet off Bayonne shore at Paraiso		Lat 40 40 00	Long 74 06 00	Gray	-	Sub-soil	Unpolluted

Examination of Deposits from the Harbor Bottom, Upper Bay.

Station- No.	Date of collection	Location of Samples Approximate	Depth in feet Fath.	Color	Odor	Consist- ency	Opinion
686	July 19, 1909	4000 feet off Bayonne shore at Parapet	Lat 40 39 37 Long 74 08 40	Gray	-	Sub- soil	Unpolluted
687	"	5000 feet off Bayonne shore at Parapet	Lat 40 39 38 Long 74 08 38	Gray	oily	Sub- soil	Unpolluted
688	"	6000 feet off Bayonne shore at Parapet	Lat 40 39 37 Long 74 08 38	Gray	-	Sub- soil	Unpolluted
689	"	7000 feet off Bayonne shore at Parapet	Lat 40 39 38 Long 74 08 38	Gray	oily	Sub- soil	Unpolluted
690	"	8000 feet off Bayonne shore at Parapet	Lat 40 39 38 Long 74 08 38	Gray	oily	Sub- soil	Unpolluted
691	"	9000 feet west of Robbins Reef	Lat 40 39 39 Long 74 08 39	Gray	oily	Sub- soil	Unpolluted
692	July 21, 1909	Off the end of E. R. R. dock at Greenville	Lat 40 40 30 Long 74 04 80	Gray	-	Muddy soil	Unpolluted
693	"	2000 feet off E. R. R. dock at Greenville	Lat 40 40 38 Long 74 04 08	Gray	-	Sub- soil	Unpolluted
694	"	2800 feet off E. R. R. dock at Greenville	Lat 40 40 39 Long 74 03 48	Gray	-	Sub- soil	Unpolluted
695	"	2600 feet off E. R. R. dock at Greenville	Lat 40 40 39 Long 74 03 47	-	-	Sandy soil	Polluted
696	"	3000 feet off E. R. R. dock at Greenville	Lat 40 40 37 Long 74 03 41	Gray	-	Sub- soil	Polluted
697	"	4000 feet off E. R. R. dock at Greenville	Lat 40 40 38 Long 74 03 38	Gray	-	Sandy Clay	Polluted
698	"	500 feet west of Robbins Reef	Lat 40 39 38 Long 74 04 08	-	-	Sandy soil	Unpolluted
699	"	1000 feet northwest of Robbins Reef	Lat 40 39 39 Long 74 04 04	Gray	-	Sub- soil	Unpolluted
700	"	2000 feet northwest of Robbins Reef	Lat 40 39 43 Long 74 04 18	Gray	oily	Clay	Unpolluted
701	"	3000 feet northwest of Robbins Reef	Lat 40 39 51 Long 74 04 30	Gray	oily	Clay	Unpolluted

Examination of Deposits from the Harbor Bottom. Upper Bay.

Examination No.	Date of collection	Location of Samples Approximate	Exact	Depth in feet Water	Color	Odor	Consistency	Opinion
702	July 21, 1909	3500 feet northwest of Robbins Reef	Lat 40 29 57 Long 74 04 22	10	Gray	Silly	Clay	Unpolluted
703	"	4000 feet northwest of Robbins Reef	Lat 40 40 02 Long 74 04 25	10	Gray	-	Clay	Unpolluted
704	"	4500 feet northwest of Robbins Reef	Lat 40 40 07 Long 74 04 25	10	Gray	Oily	Clay	Unpolluted
705	"	5000 feet northwest of Robbins Reef	Lat 40 40 15 Long 74 04 29	8	Gray	-	Clay	Unpolluted
706	"	5000 feet northwest of Robbins Reef	Lat 40 40 20 Long 74 04 33	6	Gray	-	Clay	Unpolluted
707	"	At south side of F.R.R. dock Reef	Lat 40 40 31 Long 74 04 42	5	Gray	-	Clay	Unpolluted

Ex. 98, p.63

Examination of Deposits from the Harbor Bottom Lower Bay

Examination No.	Date of Collection	Location of Samples		Depth of water feet	Color	Odor	Consist- ency	Opinion	Bacteria per gran
		Approximate	Exact						
708	July 21, 09	Sandy Hook near Shrewsbury	Lat 40 47 50 30	Black Marshy			Clay Polluted		60,000
		River	Long 74 01 35						
709	"	Shrewsbury River at Sper-	Lat 40 24 55	Brown None			Sand Unpolluted		4,800
		Maceti Cove	Long 73 59 35	"			Gravel		
710	"	Shrewsbury River at Sea-	Lat 40 21 45	"			Sand		6,000
		Bright	Long 73 56 40	"			Gravel		
711	"	Sandy Hook Bay in Horse-	Lat 40 23 45	"			Sand		2,600
		shoe	Long 73 59 50	"			Sand		
712	"	Sandy Hook bay west of	Lat 40 22 55	"			Sand		3,600
		point of hook	Long 74 01 35	"			Sand		
713	"	Lower bay-in main ship	Lat 40 28 45	"			Sand		3,200
		channel by buoy #8	Long 74 01 25	"			Sand		
714	"	Half way between buoy #8	Lat 40 29 50	"			Sand		2,800
		and Rorer light	Long 74 01 00	"			Sand		
715	"	50 ft. inside Coney Is.	Lat 40 24 15	"			Sand		2,800
		channel near bell buoy	Long 73 59 50	"			Sand		
716	"	Coney Is. channel by bell	Lat 40 34 05	Black Sewage			Sand		1,000,000
		buoy off Sea Gate Inn	Long 73 59 50	"			Sand		
717	"	On East Bank	Lat 40 32 35	Brown None			Sand		2,400
		In Fourteen foot channel	Long 73 59 45	"			Sand		
718	"	On Rorer Shoals	Lat 40 31 50	Black Sewage			Mud Polluted		1,800,000
		In Swash channel 700 ft.	Long 74 00 25	"			Sand Unpolluted		2,100
719	"	southwest of Rorer light	Lat 40 30 40	Black Sewage			Mud Polluted		1,200,000
720	"	In Swash channel 500 ft.	Long 74 00 50	"			"		1,600,000
721	"	northwest of black and	Lat 40 31 20	"			"		
		red buoy	Long 74 02 15	"			"		
722	"	In Main ship channel west	Lat 40 31 20	"			"		2,000,000
		of buoy at junction of	Long 74 02 30	"			"		
		Swash and Main channel.							

Examination of Deposits from the Harbor Bottom, Lower Bay.

Examina- tion No.	Date of collec- tion	Location of Samples		Exact O	Depth in water Feet	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate								
723	July 21, 1909	500 feet west of West Bank Light	Lat 40 32 15 Long 74 02 45	30		Brown	Marshy	Sand	Doubt- ful	600,000
724	"	Half way between West Bank Light and Elm Tree Bea- con	Lat 40 33 05 Long 73 04 10	15		"	None	Sand	Unol- uted	6,000
725	"	1000 ft. off Elm Tree Bea- con.	Lat 40 33 45 Long 74 05 30	10		"	"	"	"	4,800

Ex. 96. p. 65

Atlantic Ocean

Examination of Deposits from the Harbor Bottom

Examina- tion Col- lection No.	Date of Collection	Location of Samples		Depth of Water Feet	Color	Odor	Consist- ency	Opinion	Bacteria Per gram
		Approximate	Exact Lat. Long.						
725	July 21, 09	Atlantic Ocean in so-called "Mud Gorge" about 10 miles east of Long Branch	Lat 40 19 15 Long 73 46 45	146	Green	Marshy	Silt	Unpollut- ed	8,420
727	"	Atlantic Ocean in so-called "Mud Gorge" 10 miles off Long Branch	Lat 40 19 15 Long 73 46 45	146	"	"	"	"	5,600
729	"	Atlantic Ocean about 12 miles due east of Long Branch, easterly edge of "Mud Gorge"	Lat 40 19 15 Long 73 47 15	150	"	"	"	"	4,600
729	"	"	Lat 40 19 15 Long 73 47 15	150	"	"	"	"	7,200
730	"	"Oil Spot" on false sandy hook 150 feet east of spar buoy 54	Lat 40 27 00 Long 73 54 25	20	Brown	None	Sand	"	2,800
731	"	"Oil Spot" on false sandy hook 100 feet east of spar buoy 54	Lat 40 27 05 Long 73 54 25	20	"	"	"	"	1,000

Ex. 96. p. 66

Examination of Deposits from the Harbor Bottom. Hudson River.

Examination No.	Date of collection	Location of Samples		Depth of water Feet	Color	Odor	Consistency	Opinion	Bacteria per gram
		Approximate	Exact						
732	Aug. 19, 1909	Half way across the Hudson on a line with Pier 1	Lat 40 42 23 Long 74 01 35	80	Black		Mud	Doubtful	1000,000
733	"	Half way across Hudson opposite Pier 17	Lat 40 43 00 Long 74 01 26	40	-		Gravel	Unpolluted	-
734	"	50 ft. off end of Pier 17	Lat 40 42 56 Long 74 01 01	40	Gray		Mud	Polluted	1500,000
735	"	Hudson River, half way across from Pier 22	Lat 40 43 34 Long 74 01 19	40	"		Clay	"	650,000
736	"	Hudson River, half way across from Pier 48	Lat 40 44 06 Long 74 01 11	40	"		"	"	750,000
737	Sept. 7, 1909	Hudson River, 500 ft. off foot of W. 72 St.	Lat 40 46 54 Long 73 59 25	35	Black		Mud	"	-
738	"	Hudson River, 500 ft. off foot of W. 110 St.	Lat 40 48 23 Long 73 58 18	40	"		"	Unpolluted	-
739	"	Hudson River, 500 ft. off foot of 140 St.	Lat 40 49 31 Long 73 57 27	40	Blue		Clay	"	-
740	"	Hudson River, 500 ft. off Washington Point	Lat 40 51 02 Long 73 56 56	40	-		Gravel	"	-
741	"	Hudson River, 500 ft. off Inwood Bathing Beach	Lat 40 52 17 Long 73 55 56	40	Gray		Mud	Polluted	-
742	"	Hudson River, 500 ft. off Spuyten Duyvil Creek	Lat 40 52 44 Long 73 55 40	40	-		Gravel	Unpolluted	-
743	"	Hudson River, 500 ft. off Federal Refining Plant, Yonkers	Lat 40 55 48 Long 73 54 23	40	Gray		Gravel	"	-
744	"	Hudson River, 500 ft. off Power Plant northern limit of Yonkers	Lat 40 56 53 Long 73 54 07	35	Brown		Sand	"	-

Examination of Depoette from the Harbor Bottom Passaic River and Newark Bay

Examination Date No. Section	Location of Sample	Depth of Water		Color	Odor	Consistency	Opinion
		Approximate	Exact Feet				
745 Sept. 6, 09	Passaic River 200 ft. below P.N.R. passenger bridge, Newark	Lat 40 48 14 Long 74 08 55	15	Black	Oily	Mud	Polluted
746 "	Passaic River 100 ft. above P.N.R. freight bridge below Newark	Lat 40 44 09 Long 74 09 45	18	"	"	"	"
747 "	Passaic River 100 ft. below N.Y. and Newark P.R. bridge Newark Bay 100 feet below Lehigh Valley Bridge	Lat 40 45 21 Long 74 07 20 Lat 40 41 54 Long 74 07 12	16	Blue	"	Clay	Unpolluted
748 "	Newark Bay 200 ft. west of red bell buoy off Centre- ville	Lat 40 40 15 Long 74 08 59	16	"	"	"	Polluted
749 "	Newark Bay 100 ft. below C.N.R. of N.J. bridge	Lat 40 39 14 Long 74 08 49	16	"	"	Sand	Unpolluted

Ex. 98. p. 68

Examination of Deposits from the Harbor Bottom. Kill van Kull.

Exam- ination No.	Date of collec- tion	Location of Samples		Depth of water Feet	Color	Odor	Gravel any	Opinion
		Approximate	Exact					
761	Sept. 8, 1909	Kill van Kull, West End 1000 ft. east of light house	Lat 40 08 38 Long 74 06 48	38	-	-	Gravel	-
762	"	Kill van Kull, Midstream opposite Sailors' Inn Harbor Station	Lat 40 38 30 Long 74 06 56	40	-	-	Sand Gravel	Unpolluted
763	"	Kill van Kull East end of Point end of Constable Rock, midstream	Lat 40 38 06 Long 74 06 10	40	-	-	"	"
764	Sept. 11, 1909	Kill van Kull, midstream off Sailors' Inn Harbor	Lat 40 38 00 Long 74 06 55	40	-	-	Gravel	"
765	"	Kill van Kull, midstream off Fort Richmond	Lat 40 38 36 Long 74 07 52	40	-	-	Sand	Polluted
766	"	Kill van Kull west end 800 ft. South of Shooters Is.	Lat 40 38 33 Long 74 08 30	38	-	-	Gravel Sand	Unpolluted

Ex. 34, p. 69

Examination of Deposits from the Harbor Bottom. Lower Bay.

Examination No.	Date of collection	Location of Samples		Depth of water		Color	Odor	Consistency	Opinion
		Approximate		Exact	" Feet				
757	Sept. 13, 1909	Lower Bay, 200 ft. south-east of Ambrose Channel buoy 24	Lat 40 33 30 Long 74 01 25	35	Gray	-	Sand	Unpolluted	
758	"	Lower Bay, 1500 ft. east of A.C. buoy 20	Lat 40 32 23 Long 74 00 45	25	Black	Savage H ₂ S	Mud	Doubtful	
759	"	Lower Bay, 500 ft. north-east of A.C. buoy 10	Lat 40 31 00 Long 73 56 45	20	Gray	-	Sand	Unpolluted	
760	"	Lower Bay, about 1000 ft. north of A.C. buoy 4	Lat 40 30 20 Long 73 57 00	20	"	-	"	"	
761	"	Lower Bay, 100 ft. north-east of A. C. buoy 4	Lat 40 30 10 Long 73 56 55	35	"	-	"	"	
762	"	Lower Bay, 100 ft. south of A.C. buoy 2	Lat 40 29 55 Long 73 57 35	20	Brown	-	"	"	Polluted
763	"	Lower Bay, 100 ft. north of buoy G 6.	Lat 40 29 30 Long 73 57 20	30	"	-	"	"	Unpolluted
764	"	Lower Bay, Midway between G 6 and G 5	Lat 40 29 25 Long 73 57 20	35	Black	-	"	"	
765	"	Lower Bay, 200 ft. south of buoy G 5	Lat 40 29 10 Long 73 57 20	20	Brown	-	Gravel	"	
766	"	Lower Bay, 100 ft. south of buoy C.B. 1 off Sandy Hook	Lat 40 29 15 Long 73 58 15	30	"	-	Sand	"	
767	"	Lower Bay, 500 ft. S.W. of buoy C.B. 3 off Sandy Hook	Lat 40 28 50 Long 73 59 10	35	"	-	"	"	
768	"	Lower Bay, Main Ship's channel, 1000 ft. north-east of buoy N 8	Lat 40 28 55 Long 74 01 20	35	Gray	-	"	"	
769	"	Lower Bay, 500 ft. S.W. of buoy C.B. 1 South of Swash channel	Lat 40 29 35 Long 74 00 30	35	Brown	-	"	"	

Examination of Deposits from the Harbor Bottom. Lower Bay.

Examination No.	Date of collection	Location of Samples		Depth of water Feet	Color	Odor	Consistency	Opinion
		Approximate	Exact					
770	Sept. 14, 1909	Lower Bay, 200 ft. east of West Bank light	Lat 40 32 20 Long 74 02 30	25	Black	-	Mud Sand	Polluted
771	"	Lower Bay between 2 buoys at junction of Swath and Main channels	Lat 40 31 25 Long 74 02 30	30	"	-	"	"
772	"	Lower Bay, 300 ft. northeast of buoy C.S. 3	Lat 40 30 50 Long 74 01 45	20	"	H ₂ S	Mud	"
773	"	Lower Bay, 500 ft. south of Rorer light	Lat 40 30 45 Long 74 00 45	30	Gray	-	Mud	Doubtful
774	"	Lower Bay, 500 ft. south of buoy N.S. 4	Lat 40 30 00 Long 74 00 45	30	Brown	-	Sand	Unpolluted
775	"	Lower Bay, 500 ft. north of buoy C.S. 1	Lat 40 29 45 Long 74 00 30	25	"	-	"	"
776	"	Lower Bay, 500 ft. northwest of buoy N.S. 2	Lat 40 29 50 Long 74 00 30	25	"	-	"	"
777	"	Lower Bay, 500 ft. southeast of black buoy S. 9	Lat 40 30 45 Long 73 58 45	20	Gray	-	"	"
778	"	Lower Bay, 500 ft. northwest of Red buoy S. 10	Lat 40 31 00 Long 73 58 55	25	"	-	"	"
779	"	Lower Bay, 1/3 distance between buoy A.C. 8 and Manhattan Beach	Lat 40 32 05 Long 73 57 40	30	"	-	"	"
780	"	Lower Bay, 2/3 distance between buoy A.C. 8 and Manhattan Beach	Lat 40 33 08 Long 73 57 25	22	Brown	-	"	"

Ex. 98, p. 71

Examination of Deposits from the Harbor Bottom. Arthur Kill.

Exam- ation No.	Date of collec- tion	Location of Samples		Depth of water Feet	Color	Odor	Consist- ency	Opinion
		Approximate	Exact Loc.					
781	Sept. 16, 1909	Rahway River $\frac{1}{2}$ mile from mouth Kill, opposite Arthur Kill.	Lat 40 25 55 Long 74 12 45	8	Black	-	Mud	Unpolluted
782	"	mouth of Rahway River Arthur Kill, opposite Fresh Kill.	Lat 40 25 35 Long 74 12 15	10	"	Oily	"	Doubtful
783	"	Arthur Kill, by buoy S 6	Lat 40 34 45 Long 74 12 35	15	"	-	Sand	Unpolluted
784	"	north of Rahway River Arthur Kill, by buoy S 4	Lat 40 35 45 Long 74 12 05	12	"	-	Mud	Unpolluted
785	"	Arthur Kill, by buoy S 4 at east end of Kill	Lat 40 38 45 Long 74 10 45	15	"	-	Sand	Polluted
786	"	Kill van Kull between Shooters Is. and Mariners Harbor	Lat 40 28 35 Long 74 09 30	35	"	-	Mud	Doubtful

Ex. 98. p. 72

Examination of Deposits from the Harbor Bottom. Lower Bay.

Exam- ination No.	Date of collec- tion	Location of Samples		Depth of water Feet	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact						
787	Sept. 20, 1909	Lower Bay, 500 ft. south- west West Bank light	Lat 40 32 10 Long 74 02 40	20	Brown Murky Sand		Polluted	-	-
788	"	Lower Bay, about 1 mile from West Bank light in line with Fort Mon- mouth	Lat 40 31 25 Long 74 03 00	20	Black Sessage Mud		"	-	-
789	"	Lower Bay, near white buoy	Lat 40 30 20 Long 74 02 15	20	Brown Sessage		Sand	Unpollut- ed	
790	"	Lower Bay, farther north on same line	Lat 40 29 25 Long 74 03 25	25	"		"	Doubtful	
791	"	Lower Bay, 1000 ft. west of buoy S. G. 1	Lat 40 28 25 Long 74 03 15	25	Black Murky		"	Polluted	530,000
792	"	Lower Bay, farther north on same line	Lat 40 27 40 Long 74 02 40	20	Brown		"	"	250,000
793	"	Lower Bay, about 1 mile off Atlantic Highlands	Lat 40 26 25 Long 74 03 15	20	Black		Sand	"	350,000
794	"	Lower Bay, about 8 miles off Atlantic Highlands	Lat 40 25 50 Long 74 03 35	15	Brown		Mud	"	240,000
795	"	Lower Bay, 2000 ft. west of buoy S. L. W. off Ft. Comfort	Lat 40 23 00 Long 74 07 50	12	"		Sand	Unpollut- ed	360,000
796	"	Lower Bay, nearer Great Kills	Lat 40 22 50 Long 74 07 40	25	Black		Mud	"	250,000
797	"	Lower Bay, 1 1/2 miles south of Great Kills	Lat 40 20 25 Long 74 07 40	15	Brown		Sand	"	1,000,000
798	"	Lower Bay, 1 mile south of Great Kills	Lat 40 21 10 Long 74 07 45	10	"		"	"	150,000

Examination of Deposits from the Harbor Bottom. Maritan Bay.

Examination No.	Date of collection	Location of Samples		Depth of water		Color	Odor	Consistency	Opinion	Bacteria per Gram
		Approximate	Exact	Feet	Feet					
799	Sept. 21, 1909	Maritan Bay, off Seguine Pt. 1000 ft. east of buoy S 3	Lat 40 20 30 Long 74 01 06	20	20	Black	-	Mud	Doubtful	-
800	"	Maritan Bay, by buoy S. 3 in Seguine channel	Lat 40 20 30 Long 74 11 26	25	25	-	-	Gravel	-	-
801	"	Maritan Bay, 1000 ft. south east Princess Bay light	Lat 40 30 20 Long 74 12 36	30	30	Black	-	Mud	Doubtful	800,000
802	"	Maritan Bay, by red buoy S. 5	Lat 40 29 46 Long 74 12 26	25	25	"	-	Mud	"	480,000
803	"	Maritan Bay, by red buoy S. 8	Lat 40 29 08 Long 74 14 20	25	25	"	-	"	"	380,000
804	"	Maritan Bay, 500 ft. north of Great Bede light	Lat 40 29 16 Long 74 15 16	16	16	-	-	Clank- ere	-	-

Ex. 96. p. 74

Examination of Deposits from the Harbor Bottom. Arthur Kill.

Examination No.	Date of collection	Location of Samples		Depth of water		Color	Odor	Consistency	Opinion	Bacteria per gram
		Approximate	Exact	Feet	Fath					
808	Sept. 23, 1909	Arthur Kill, 200 ft. west of buoy 3	Lat 40 30 10 Long 74 18 40	20	30	Brown	-	Red	Unpolluted	480,000
806	"	Arthur Kill, 200 ft. west of buoy 2, at Tottenville, N.J.	Lat 40 30 58 Long 74 18 18	20	15	-	-	-	Clinkers	

Ex. 99, p. 70

Examination of deposits from the Harbor Bottom, Hudson River.

Station No.	Date of Collection	Location of Samples		Depth of water		Color	Cone	Const.	Opaline	Material per acre
		Approximate	Exact	ft.	ft.					
907	Oct. 1, 1899	Hudson River, 180 ft. out from Pier 4	Lat 40 42 46 Long 74 01 07	40	40	Black	Sand	Gravel	Polished	200,000

20, 30, 40, 50

Examination of Deposits from the Harbor Bottom. Harlem River.

Examination No.	Date of collection	Location of Samples		Exact O	Depth of water feet	Color	Odor	Consistency	Opinion	Bacteria per gram
		Approximate								
808	Oct. 11, 1909	Harlem River, Opposite E. 116 St. midstream	Lat 40 47 37 Long 73 55 47	20	Gray	Gas house	Mud	Polluted	150,000	
809	"	Harlem River, Opposite E. 116 St. 50 feet off Manhattan shore	Lat 40 47 38 Long 73 55 50	20	"	Gas house	"	"	360,000	
810	"	Harlem River, Opposite E. 110 St. midstream	Lat 40 47 25 Long 73 56 03	20	Black	H ₂ S	"	"	300,000	
811	"	Harlem River, Opposite E. 110 St. 50 ft. off Manhattan shore	Lat 40 47 26 Long 73 56 06	20	"	H ₂ S	"	"	-	

Ex: 98. p. 77

Examination of Deposits from the Harbor Bottom, East River.

Exam- ination No.	Date of Collec- tion	Location of Samples		Depth of water (feet)	Color	Odor	Consist- ency	Opinion	Bacteria per gram.
		Approximate							
812	Oct. 1.	East River, 1000 feet off mouth of Newtown Creek	Lat 40 44 13 Long 73 57 57	30	Black	Oily Gas-house	Sand	Polluted	1,300,000
813	"	East River, 1000 feet off mouth of Newtown Creek	Lat 40 44 13 Long 73 57 57	30	Black	Oily Gas-house	Cinders	Doubtful	
814	"	East River, outer edge of Wallabout Bay	Lat 40 42 25 Long 73 58 30	30	Black	Oily H ₂ S	Mud	Polluted	1,100,000
815	"	East River, 200 feet out- side Wallabout Canal	Lat 40 42 16 Long 73 58 13	15	Black	Oily H ₂ S	Mud	Polluted	450,000

Ex. 92. p. 78

Examination of Deposits from the Harbor Bottom, Hudson River

Exam- ina- Collec- tion No.	Location of Samples		Depth of water " " (feet)	Color	Odor	Consist- ency	Opinion Bacteria per gram.
	Approximate	Exact					
816	Oct. 2, Hudson River, 30 feet south 1909 of outer S.W. corner of Fier A		40 42 15 40	Black	Sewage	Mud	Polluted 750,000
			Long 74 01 08				

Ex. 98. p. 79

Examination of Deposits from the Harbor Bottom, Harlem River.

Exam- ina- tion No.	Date of Collec- tion	Location of Sample		Depth of water (feet)	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact						
017	Oct. 2,	Harlem River, opposite	Lat 40 47 00	25	Black	H ₂ S	Mud	Polluted	650,000
	1909	E. 103rd St. Midstream	Long 73 56 15						
018	"	Harlem River, opposite	Lat 40 47 13	25	Black	H ₂ S	Mud	Polluted	
		E. 105th St. Midstream	Long 73 56 12						
019	"	Harlem River, opposite	Lat 40 47 21	25	Black	H ₂ S	Mud	Polluted	1,700,000
		E. 109th St. Midstream	Long 73 56 08						

Ex. 94. p. 80

Examination of Deposits from the Harbor Bottom, Newtown Creek.

Exam- ine- tion No.	Date of Collec- tion	Location of Samples Approximate	Depth of water		Color	Odor	Consist- ency	Opinion
			Exact	" (feet)				
820	Oct. 2 1909	Newtown Creek, 100 feet below first bridge	Lat 40 44 21 Long 73 54 21	50	Black		Gravel	Polluted

Ex. 98, p. 81

Examination of Deposits from the Harbor Bottom, Upper Bay.

Name- Date of Collection Site	Location of Samples		Depth in Feet	Color	Consist- ency	Opinion	Bacteria per gram.
	Approximate	Exact					
821	Oct. 4, 1909	By Navy S. S. "off Governor's Bay"	Lat 40 39 43 Long 74 01 20	Black H ₂ O	Slud	Polluted	700,000
822	"	"	Lat 40 39 43 Long 74 01 20	Black H ₂ O	Sand	Unpolluted	200,000
823	"	"	Lat 40 39 43 Long 74 01 20	Black H ₂ O	Slud	Beneficial	600,000
824	"	"	Lat 40 39 43 Long 74 01 20	Gray H ₂ O	Clay	Unpolluted	780,000
825	"	"	Lat 40 39 43 Long 74 01 20	Gray H ₂ O	Clay	Beneficial	900,000
826	"	"	Lat 40 39 43 Long 74 01 20	Gray H ₂ O	Clay	Unpolluted	2,800,000
827	"	"	Lat 40 39 43 Long 74 01 20	Gray H ₂ O	Clay	Beneficial	2,000,000
828	"	"	Lat 40 39 43 Long 74 01 20	Gray H ₂ O	Clay	Beneficial	900,000
829	"	"	Lat 40 39 43 Long 74 01 20	Gray H ₂ O	Clay	Polluted	1,000,000
830	"	"	Lat 40 39 43 Long 74 01 20	Gray H ₂ O	Clay	Unpolluted	800,000
831	"	"	Lat 40 39 43 Long 74 01 20	Gray H ₂ O	Clay	Beneficial	600,000

Ex. 90. 9.88

Examination of Deposits from the Harbor Bottom, Gowanus Canal.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth in Feet	Color	Odor	Consist- ency	Opinion Bacteria per gram.
		Approximate	Exact					
832	Oct. 4	Gowanus Canal, at foot of	Lat 40 39 37	20	0	Black	Gas	Mod Polluted 2,000,000
	1908	Clinton St.	Long 74 00 25	20	1	Black	Gas	Mod Polluted 1,700,000
833	"	"	Lat 40 39 37	20	2	Black	Gas	Mod Polluted 1,900,000
834	"	"	Long 74 00 25	20	3	Black	Gas	Mod Polluted 600,000
835	"	"	Lat 40 39 37	20	4	Black	Gas	Mod Polluted 210,000
836	"	"	Long 74 00 25	20	5	Black	Gas	Mod Polluted 450,000
837	"	"	Lat 40 39 37	20	6	Black	Gas	Mod Polluted 450,000
			Long 74 00 25					

Ex. 98, p. 23

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth in feet	Color	Odor	Consist-Opinion ency	Bacteria per gram
		Approximate	Exact O. W.					
838	Oct. 6, 1909	Upper Bay, 50 feet south of buoy M 14	Lat 40 40 33 Long 74 02 10	20 0	Black	H ₂ S	Mud sand Polluted	500,000
839	"	"	Lat 40 40 33 Long 74 02 10	20 1	Black	H ₂ S	Mud sand Polluted	380,000
840	"	"	Lat 40 40 33 Long 74 02 10	20 2	Black	H ₂ S	Mud sand Polluted	200,000
841	"	"	Lat 40 40 33 Long 74 02 10	20 3	Gray	H ₂ S	Sand Unpolluted	320,000
842	"	"	Lat 40 40 33 Long 74 02 10	20 4	Gray		Sand Unpolluted	280,000
843	"	Upper Bay, in Red Hook channel, 30 feet off pier 46.	Lat 40 40 20 Long 74 01 10	30 0	Black	Gas house H ₂ S	Mud Polluted	1,500,000
844	"	"	Lat 40 40 20 Long 74 01 10	30 1	Black	H ₂ S	Mud Polluted	410,000
845	"	"	Lat 40 40 20 Long 74 01 10	30 2	Black	H ₂ S	Mud Polluted	380,000
846	"	"	Lat 40 40 20 Long 74 01 10	30 3	Black	H ₂ S	Mud Polluted	440,000
847	"	"	Lat 40 40 20 Long 74 01 10	30 4	Black	H ₂ S	Mud Polluted	1,000,000
848	"	"	Lat 40 40 20 Long 74 01 10	30 5	Black	H ₂ S	Mud Polluted	2,000,000
849	"	"	Lat 40 40 20 Long 74 01 10	30 6	Black	H ₂ S	Mud Polluted	300,000
850	"	"	Lat 40 40 20 Long 74 01 10	30 7	Black	H ₂ S	Mud Polluted	500,000
851	"	"	Lat 40 40 20 Long 74 01 10	30 8	Black	H ₂ S	Mud sand Polluted	700,000
852	"	"	Lat 40 40 20 Long 74 01 10	30 9	Black	H ₂ S	Mud sand Polluted	250,000

Ex. 96.p.84

Examination of Deposits from the Harbor Bottom, Upper Bay (Continued)

Examina- tion of Col- No. locion.	Date	Location of Samples	Depth		Color	Odor	Consist- ency	Opinion	Bacteria per gram
			Approximate	Exact					
				in Feet 0					
					"Water-Mud				
853	Oct. 7, 1909	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	0	Black	H ₂ S	Mud Polluted	450,000
854	"	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	1	Black	"	"	1,200,000
855	"	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	2	Black	"	Unpolluted	300,000
856	"	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	3	Black	"	"	300,000
857	"	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	4	Black	"	"	400,000
858	"	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	5	Gray	"	Mud	600,000
859	"	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	6	Gray	"	sand	200,000
860	"	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	7	Gray	"	Mud	260,000
861	"	Upper Bay-30 ft. east of bell buoy #12 1/2	Lat 40 38 22 Long 74 03 13	25	8	Gray	"	sand	210,000
862	"	Upper Bay-20 ft. south of end of new ferry dock, Stapleton, S.I.	Lat 40 37 37 Long 74 04 09	26	0	Black	"	Mud Polluted	400,000
863	"	"	Lat 40 37 37 Long 74 04 09	26	3	Black	"	Mud Doubtful	150,000
864	"	"	Lat 40 37 37 Long 74 04 09	26	4	Black	"	"	250,000
865	"	"	Lat 40 37 37 Long 74 04 09	26	5	Black	"	"	280,000
866	"	"	Lat 40 37 37 Long 74 04 09	26	6	Gray	"	Clay	110,000
867	"	"	Lat 40 37 37 Long 74 04 09	26	7	Gray	"	sand	Unpolluted 500,000
			Lat 40 37 37 Long 74 04 09	26				Clay	
								Unpolluted sand	

Br. 98. p. 85

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued).

Exam- ina tion No.	Date of Collec- tion	Location of Samples		Depth in Feet	Color	Odor	Consist- ency	Opinion	Bacteria per gram.
		Approximate	Exact						
866	Oct. 7	Upper Bay, 50 ft. south of end of new ferry	Lat 40 37 37 Long 74 04 09	26	Gray	H ₂ S	Clay sand	Unpolluted	200,000
869	"	"	Lat 40 37 37 Long 74 04 09	26	Gray	H ₂ S	Clay sand	Unpolluted	130,000
870	"	"	Lat 40 37 37 Long 74 04 09	26	Gray	H ₂ S	Clay sand	Unpolluted	210,000
871	Oct. 6	Upper Bay, midway be- tween Robbins Reef light and Owl Head	Lat 40 38 54 Long 74 03 06	32	Black	H ₂ S	Mud	Doubtful	500,000
872	"	"	Lat 40 38 54 Long 74 03 06	32	Black	H ₂ S	Mud	Unpolluted	130,000
873	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	220,000
874	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	300,000
875	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	280,000
876	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	170,000
877	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	190,000
878	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	
879	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	
880	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	
881	"	"	Lat 40 38 54 Long 74 03 06	32	Gray	H ₂ S	Clay	Unpolluted	

Ex. 98. p. 86

Examination of Deposits from the Harbor Bottom, Kill van Kull.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth in Feet		Color	Odor	Consist- ency	Opinion
		Approximate	Exact	Water	Mud				
882	Oct. 8,	Kill van Kull, 50 ft. off dock at	Lat. 40 38 20	20	0	Black	H ₂ S	Mud	Polluted
883	1899	Ferry, Port Richmond, N.J.	Long 74 07 53	20	1	Black	H ₂ S	Mud	Polluted
884	"	"	Lat. 40 36 30	20	2	Black	H ₂ S	Mud	Polluted
885	"	"	Long 74 07 53	20	3	Black	H ₂ S	Mud	Polluted
886	"	"	Lat. 40 36 30	20	4	Black	H ₂ S	Mud	Polluted
887	"	"	Long 74 07 53	20	5	Black	H ₂ S	Mud	Polluted
888	"	"	Lat. 40 36 30	20	6	Black	H ₂ S	Mud	Polluted
889	"	"	Long 74 07 53	20	7	Black	H ₂ S	Mud	Polluted
890	"	"	Lat. 40 36 30	20	8	Black	H ₂ S	Mud	Polluted
891	"	"	Long 74 07 53	20	9	Black	H ₂ S	Mud	Polluted
892	"	"	Lat. 40 36 30	20	10	Black	H ₂ S	Mud	Polluted
893	"	"	Long 74 07 53	20	11	Black	H ₂ S	Mud	Polluted

Ex. 90. P. 67

Examination of Deposits from the Harbor Bottom, Upper Bay.

Exam- ine- Collection No.	Date of Collection	Location of Sample		Exact No.	Depth in Feet	Color	Odor	Consist- ency	Opinion	Bacteria per gram.
		Approximate			Water					
894	Oct. 11, 1908	Upper Bay, 50 ft. east of red buoy off Killis Is.	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	35	0	Black H ₂ S	Mud sand	Polluted	800,000
895	"	Upper Bay, 50 ft. east of red buoy off Killis Is.	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	36	1	Black H ₂ S	Mud	Polluted	700,000
896	"	"	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	35	2	Black H ₂ S	Mud	Polluted	700,000
897	"	"	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	35	3	Black H ₂ S	Mud	Polluted	3,000,000
898	"	"	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	35	4	Black H ₂ S	Mud	Polluted	1,800,000
899	"	"	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	35	5	Black H ₂ S	Mud	Unpolluted	3,000,000
900	"	"	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	35	6	Black H ₂ S	Mud	Unpolluted	480,000
901	"	"	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	35	7	Black H ₂ S	Mud clay	Unpolluted	550,000
902	"	"	Lat 40 41 50 Long 74 02 07	40 41 50 74 02 07	35	8	Black H ₂ S	Mud Clay	Unpolluted	300,000
903	"	Upper Bay, 1 1/2 mile west of Robbins Reef	Lat 40 39 24 Long 74 04 14	40 39 24 74 04 14	15	0	Black Oil	Mud	Polluted	3,000,000
904	"	"	Lat 40 39 24 Long 74 04 14	40 39 24 74 04 14	15	1	Black H ₂ S	Mud sand	Unpolluted	1,800,000
905	"	"	Lat 40 39 24 Long 74 04 14	40 39 24 74 04 14	15	2	Brown Marshy	Sand	Unpolluted	1,800,000
906	"	"	Lat 40 39 24 Long 74 04 14	40 39 24 74 04 14	15	3	Brown Marshy	Sand	Unpolluted	

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Examination of Deposits from the Harbor Bottom, Will Van Hall.

Exam- ina- tion No.	Date of Collec- tion	Location of Sample		Depth in Feet	Color	Odor	Consist- ency	Hygienic	Bacteria per gram
		Approximate	Exact						
907	Oct. 13	Opposite	Lat 40 38 44	50	0	Black	Sludge	Mid	800,000
	1909	Livingston Is., N. I.	Long 74 05 40						
908	"	"	Lat 40 38 44	50	1	Black	Horsem	Mid	900,000
909	"	"	Long 74 05 40	50	2	Black	Horsem	Mid	900,000
	"	"	Lat 40 38 44	50	3	Black	Horsem	Mid	900,000
910	"	"	Long 74 05 40	50	4	Black	Horsem	Mid	1,000,000
	"	"	Lat 40 38 44	50	5	Black	Horsem	Mid	1,000,000
911	"	"	Long 74 05 40	50	6	Black	Horsem	Mid	170,000
	"	"	Lat 40 38 44	50	7	Gray	H ₂ O	Mid	220,000
912	"	"	Long 74 05 40	50	8	Gray	H ₂ O	Mid	400,000
	"	"	Lat 40 38 44	50	9	Gray	H ₂ O	Mid	150,000
913	"	"	Long 74 05 40	50	0	Gray	H ₂ O	Mid	Unpolluted
	"	"	Lat 40 38 44	50	1	Gray	H ₂ O	Mid	Unpolluted
914	"	"	Long 74 05 40	50	2	Gray	H ₂ O	Mid	Unpolluted
	"	"	Lat 40 38 44	50	3	Gray	H ₂ O	Mid	Unpolluted
915	"	"	Long 74 05 40	50	4	Gray	H ₂ O	Mid	Unpolluted
	"	"	Lat 40 38 44	50	5	Gray	H ₂ O	Mid	Unpolluted

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Examination of Deposits from the Harbor Bottom, Arthur Kill.

Sample No.	Date of Collection	Location of Sample	Depth of water in feet	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact					
918	Oct. 14, 1909	Arthur Kill, 200 ft. east of bridge at Elizabethport	Lat 40 38 20 Long 74 11 28	Gray	Sewage	Clay	Beautiful	250,000

Dr. 98, p. 90

Examination of Deposits from the Harbor Bottom, Newark Bay.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Exact " "	Depth in Feet water Mud	Color	Odor	Consist- ency	Opinion	Bacteria per Gram.
		Approximate	Lat							
917	Oct. 14, 1909	Newark Bay, 50 feet off Singer Pier.	Lat 40 39 10	Long 74 10 11	12	0	Black H ₂ S	Mud	Polluted	580,000
918	"	"	"	"	12	1	Black H ₂ S	Mud	Polluted	170,000
919	"	"	"	"	12	2	Black H ₂ S	Mud	Polluted	340,000
920	"	"	"	"	12	3	Black H ₂ S	Mud	Polluted	140,000
921	"	"	"	"	12	4	Black H ₂ S	Mud	Polluted	
922	"	"	"	"	12	5	Black H ₂ S	Mud	Polluted	480,000
923	"	"	"	"	12	6	Black H ₂ S	Mud	Polluted	160,000
924	"	"	"	"	12	7	Black H ₂ S	Mud	Polluted	240,000
925	"	"	"	"	12	8	Black H ₂ S	Mud	Polluted	140,000
926	"	"	"	"	12	9	Black H ₂ S	Mud	Polluted	230,000
927	"	"	"	"	12	10	Black H ₂ S	Mud	Polluted	300,000
928	"	"	"	"	12	11	Black H ₂ S	Mud	Polluted	120,000
929	"	Newark Bay, midway be- tween Shooters Is. and Corner Stake light	Lat 40 38 49	Long 74 10 11	18	0	Black Oily H ₂ S	Mud	Polluted	

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Examination of Deposits from the Harbor Bottom, Newark Bay.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth in Feet	Color	Odor	Consist- ency	Opinion	Bacteria per gram.
		Approximate	Exact						
930	Oct. 14, 1909	Newark Bay, midway be- tween Shooters Is. and Corner State light	Lat 40 38 49 Long 74 10 11	18	1	Black H ₂ S	Mud	Polluted	2,000,000
931	"	Newark Bay, midway be- tween Shooters Is. and Corner State light	Lat 40 38 49 Long 74 10 11	19	2	Black H ₂ S	Mud	Polluted	1,800,000
932	"	"	Lat 40 38 49 Long 74 10 11	19	3	Black H ₂ S	Mud	Polluted	3,000,000
933	"	"	Lat 40 38 49 Long 74 10 11	18	4	Black H ₂ S	Mud	Polluted	1,600,000
934	"	"	Lat 40 38 49 Long 74 10 11	18	5	Black H ₂ S	Mud	Polluted	1,700,000
935	"	"	Lat 40 38 49 Long 74 10 11	18	6	Black H ₂ S	Mud	Polluted	900,000
936	"	"	Lat 40 38 49 Long 74 10 11	18	7	Black H ₂ S	Mud	Polluted	2,100,000
937	Oct. 15, 1909	Newark Bay, 300 feet south of C.R.R. of N.J. bridge	Lat 40 39 13 Long 74 08 45	12	0	Black Sewage	Mud	Polluted	880,000
938	"	"	Lat 40 39 13 Long 74 08 45	12	1	Black H ₂ S	Mud	Polluted	1,100,000
939	"	"	Lat 40 39 13 Long 74 08 45	12	2	Black H ₂ S	Mud	Polluted	1,400,000
940	"	"	Lat 40 39 13 Long 74 08 45	12	3	Gray H ₂ S	Clay	Unpolluted	200,000
941	"	"	Lat 40 39 13 Long 74 08 45	12	4	Gray H ₂ S	Clay	Unpolluted	700,000
942	Oct. "	Newark Bay, midway be- tween red bell buoy and Centreville shore	Lat 40 40 07 Long 74 07 53	8	0	Gray Marshy	Clay	Doubtful	750,000
943	"	"	Lat 40 40 07 Long 74 07 53	8	1	Gray Marshy	Clay	Unpolluted	300,000

Examination of Deposits from the Harbor Bottom, Newark Bay.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth in feet	Water	Mud	Color	Odor	Consist- ency	Opinion	Bacteria
		Approximate	Exact								
944	Oct. 15, 1909	Newark Bay, midway be- tween red buoy and Centreville shore "	Lat 40 40 07 S Long 74 07 53 W	8	2	Gray	Marshy		Clay	Doubtful	350,000
945	"	"	Lat 40 40 07 S Long 74 07 53 W	8	3	Gray	Marshy		Clay	Unpolluted	470,000
946	"	Newark Bay, 200 feet east of black buoy C 3	Lat 40 41 21 N Long 74 07 38 W	12	0	Black	H ₂ S		Sand	Polluted	1,200,000
947	"	"	Lat 40 41 21 N Long 74 07 38 W	12	1	Black	Marshy		Sand mud	Polluted	900,000
948	"	"	Lat 40 41 21 N Long 74 07 38 W	12	2	Gray	Marshy		Clay	Unpolluted	750,000
949	"	"	Lat 40 41 21 N Long 74 07 38 W	12	3	Gray	Marshy		Clay	Unpolluted	500,000
950	"	"	Lat 40 41 21 N Long 74 07 38 W	12	4	Gray	Marshy		Clay	Unpolluted	480,000
951	"	"	Lat 40 41 21 N Long 74 07 38 W	12	5	Gray	Marshy		Clay	Unpolluted	800,000
952	"	"	Lat 40 41 21 N Long 74 07 38 W	12	6	Gray	Marshy		Clay	Unpolluted	
953	"	"	Lat 40 41 21 N Long 74 07 38 W	12	7	Gray	Marshy		Clay	Unpolluted	420,000
954	"	"	Lat 40 41 21 N Long 74 07 38 W	12	8	Gray	Marshy		Clay	Unpolluted	560,000
955	"	"	Lat 40 41 21 N Long 74 07 38 W	12	9	Gray	Marshy		Clay	Unpolluted	420,000
956	"	"	Lat 40 41 21 N Long 74 07 38 W	12	10	Gray	Marshy		Clay	Unpolluted	
957	"	Newark Bay, 100 ft. west of red and black buoy N above E.V.R.N. bridge	Lat 40 42 25 N Long 74 07 31 W	16	0	Black	H ₂ S		Mud	Polluted	

Examination of Deposits from the Harbor Bottom, Newark Bay.

Specimen- No.	Date of Collection	Location of Samples		Exact O. I.	Depth in feet	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact							
988	Oct. 15, 1909	Newark Bay, 100 feet west of red and black buoy	Lat 40 42 25 Long 74 07 11	16	1	Black	H ₂ S	Mud	Polluted	
989	"	"	Lat 40 42 25 Long 74 07 11	16	2	Black	H ₂ S	Mud	Polluted	
990	"	"	Lat 40 42 25 Long 74 07 11	16	3	Black	H ₂ S	Mud	Polluted	
991	"	"	Lat 40 42 25 Long 74 07 11	16	4	Black	H ₂ S	Mud	Polluted	
992	"	"	Lat 40 42 25 Long 74 07 11	16	5	Black	H ₂ S	Mud	Polluted	

Ex. 98, p. 94

Kill van Kull.

Examination of Deposits from the Harbor Bottoms

Exam- ination No.	Date of collection	Location of Samples		Exact Feet from Water	Depth of Feet	Color	Odor	Consist- ency	Opinion
		Approximate							
943	Oct. 16, 1900	Kill van Kull, Pier head line off Bodine Creek	Lat 40 56 20 Long 74 07 39	12	0	Black	None	Med	Polluted
944	"	Kill van Kull, Pier head line off Bodine Creek	Lat 40 56 28 Long 74 07 39	12	1	"	None	"	"
945	"	"	Lat 40 56 28 Long 74 07 39	12	2	"	"	"	"
946	"	"	Lat 40 56 28 Long 74 07 39	12	3	"	"	"	"
947	"	"	Lat 40 56 28 Long 74 07 39	12	4	"	"	"	"
948	"	"	Lat 40 56 28 Long 74 07 39	12	5	"	"	"	"
949	"	"	Lat 40 56 28 Long 74 07 39	12	6	"	"	"	"
950	"	"	Lat 40 56 28 Long 74 07 39	12	7	"	"	"	"
951	"	"	Lat 40 56 28 Long 74 07 39	12	8	"	"	"	"
952	"	"	Lat 40 56 28 Long 74 07 39	12	9	"	"	"	"

Ex. 92, p. 95

Description of Specimens from the Harbor Station. River Bay.

Serial- Name of station collected- No. 1100	Approximate	Location of Sample		Depth of feet from Water	Color	Clear	Consist-Opinion soil
		Lat Long	Long				
972	Oct. 18, 1903	Upper 400 feet south of Port Liberty coal dock	"	10	0	Black	Red Polluted Clay Mud
974	"	"	"	10	1	"	"
976	"	"	"	10	2	"	"
978	"	"	"	10	3	"	"
979	"	"	"	10	4	Gray	"
979	"	"	"	10	4	"	Dark Red
979	"	"	"	10	6	"	"
979	"	"	"	10	6	"	Unpolluted
980	"	"	"	10	7	"	"
981	"	"	"	10	8	"	"
982	"	"	"	10	9	"	"

No. 90, p. 96

Examination of Deposits from the Harbor Bottom, Hudson River.

Exam- Date of nation collec- tion	Approximate	Location of Samples		Depth in Feet	Color	Odor	Con- sist- ency	Bacteria per gram
		Lat	Long					
988	Oct. 16, Hudson River, end of pier	Lat 40 44 54	Long 74 01 54	20	0	Black	See- Mud Polluted	1,800,000
989	1909 10th St., Hoboken	Lat 40 44 54	Long 74 01 54	20	1	"	"	1,800,000
990	"	Lat 40 44 54	Long 74 01 54	20	2	"	"	2,000,000
991	"	Lat 40 44 54	Long 74 01 54	20	3	"	"	1,800,000
992	"	Lat 40 44 54	Long 74 01 54	20	4	"	"	2,000,000
993	"	Lat 40 44 54	Long 74 01 54	20	5	"	"	1,400,000
994	"	Lat 40 44 54	Long 74 01 54	20	6	"	"	1,000,000
995	"	Lat 40 44 54	Long 74 01 54	20	7	"	"	1,800,000
996	"	Lat 40 44 54	Long 74 01 54	20	8	"	"	1,000,000
997	"	Lat 40 44 54	Long 74 01 54	20	9	"	"	1,800,000
998	"	Lat 40 44 54	Long 74 01 54	20	10	"	"	1,400,000

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51000003

Examination of Deposits from the Harbor Bottom, Newark Bay.

Examination No.	Date of Collection	Location of Samples		Depth in Feet		Color	Odor	Consistency	Opinion Bacteria per Gram
		Approximate	Exact	Water	Mud				
994	Oct. 21, 1909	Newark Bay, 100 feet south of C.R.R. of N.J. bridge	Lat Long	40 39 15 74 08 22	15	0 Black	H ₂ S	Mud Polluted	2,400,000
995	"	"	Lat Long	40 39 15 74 08 22	15	1 "	"	Sand "	2,000,000
996	"	Newark Bay, 1000 feet south of C.R.R. of N.J. bridge	Lat Long	40 39 05 74 08 46	8	0 "	"	Sand "	1,600,000
997	"	"	Lat Long	40 39 06 74 08 46	8	1 "	"	Mud "	1,200,000
998	"	Newark Bay, 400 feet south of C.R.R. of N.J. bridge, 2000 feet from Elizabeth- port shore	Lat Long	40 39 13 74 09 45	12	0 "	"	Mud "	2,000,000
999	"	"	Lat Long	40 39 13 74 09 45	12	1 "	"	Mud "	1,800,000
1000	"	"	Lat Long	40 39 13 74 09 45	12	2 "	"	Mud "	800,000
1001	"	"	Lat Long	40 39 13 74 09 45	12	3 Gray	"	Clay Unpolluted	250,000
1002	"	"	Lat Long	40 39 13 74 09 45	12	4 "	None	"	130,000
1003	"	"	Lat Long	40 39 13 74 09 45	12	5 "	"	"	120,000
1004	"	"	Lat Long	40 39 13 74 09 45	12	6 "	"	Sand "	40,000
1005	"	Newark Bay, 400 feet south of C.R.R. of N.J. bridge, 1000 feet off Elizabeth- port shore	Lat Long	40 39 14 74 09 55	9	0 Black	H ₂ S	Mud Polluted	1,200,000
1006	"	"	Lat Long	40 39 14 74 09 55	9	1 "	"	Mud Unpolluted	800,000
1007	"	"	Lat Long	40 39 14 74 09 55	9	2 Gray	"	Sand Clay	400,000

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Examination of Deposits from the Harbor Bottom, Newark Bay.

Examination No.	Date of collection	Location of Samples		Depth in Feet		Color	Odor	Con- sist- ency	Opinion Bacteria per gram
		Approximate	Exact	0	Water Mud				
1008	Oct. 21, 1909	Newark Bay, 400 feet south of C.R.R. of N.J. bridge, 1000 feet off Elizabethport shore	Lat 40 29 14 Long 74 09 58	9	5	Gray	H ₂ S	Clay Unpollut- ed	200,000
1009	"	"	Lat 40 39 14 Long 74 09 58	9	4	"	"	"	160,000
1010	"	"	Lat 40 39 14 Long 74 09 58	9	5	"	"	"	180,000
1011	"	"	Lat 40 39 14 Long 74 09 58	9	6	"	"	"	600,000
1012	"	"	Lat 40 39 14 Long 74 09 58	9	7	"	"	"	1,700,000
1013	"	"	Lat 40 39 14 Long 74 09 58	9	8	"	"	"	1,800,000
1014	"	"	Lat 40 39 14 Long 74 09 58	9	9	"	"	"	1,800,000
1015	"	"	Lat 40 39 14 Long 74 09 58	9	10	"	"	"	1,800,000

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Examination of Deposits from the Harbor Bottom, Hudson River.

Exami- nation No. tion	Date of collec- tion	Location of Samples		Exact Depth in Feet	Color	Odor	Con- sist- ency	Opinion	Bacteria Per gram
		Approximate	Lat Long						
1016	Oct. 22, 1909	Hudson River, North side Scandinavian line pier, Hoboken	Lat 40 45 17 Long 74 01 22	30 0	Black	Coal tar	Mud Polluted	9,000,000	
1017	"	"	Lat 40 45 17 Long 74 01 22	30 1	"	"	"	"	7,000,000
1018	"	"	Lat 40 45 17 Long 74 01 22	30 2	"	"	"	"	6,000,000
1019	"	"	Lat 40 45 17 Long 74 01 22	30 3	"	"	"	"	4,000,000
1020	"	"	Lat 40 45 17 Long 74 01 22	30 4	"	"	"	"	2,000,000
1021	"	"	Lat 40 45 17 Long 74 01 22	30 5	"	"	"	"	1,800,000
1022	"	"	Lat 40 45 17 Long 74 01 22	30 6	"	"	"	"	4,000,000
1023	"	"	Lat 40 45 17 Long 74 01 22	30 7	"	"	"	"	3,000,000
1024	"	"	Lat 40 45 17 Long 74 01 22	30 8	Gray	"	Clay Unpol- luted	2,000,000	
1025	"	"	Lat 40 45 17 Long 74 01 22	30 9	"	"	"	"	1,000,000
1026	"	"	Lat 40 45 17 Long 74 01 22	30 10	"	"	"	"	2,500,000
1027	"	"	Lat 40 45 17 Long 74 01 22	30 11	"	"	"	"	1,500,000

Ex. 96. p.100

Examination of Deposits from the Harbor Bottom, Upper Bay. (Continued)

Exam- ina- tion No.	Location of Samples		Depth in feet	Color	Odor	Consist- ency	Opinion Bacteria per gram
	Approximate	Exact					
1028	Oct. 25, 1909	Upper Bay, Red Hook channel pier head line off Red Hook stores	Lat 40 40 43 Long 74 01 13	NO	0	Black Sewage Mud	1,800,000
1029	"	"	Lat 40 40 43 Long 74 01 13	NO	1	"	"
1030	"	"	Lat 40 40 43 Long 74 01 13	NO	2	Gray None	2,800,100
1031	"	"	Lat 40 40 43 Long 74 01 13	NO	3	"	750,000
1032	"	"	Lat 40 40 43 Long 74 01 13	NO	4	"	500,000
1033	"	"	Lat 40 40 43 Long 74 01 13	NO	5	"	450,000
1034	"	"	Lat 40 40 43 Long 74 01 13	NO	6	"	250,000
1035	"	"	Lat 40 40 43 Long 74 01 13	NO	7	"	400,000
1036	"	"	Lat 40 40 43 Long 74 01 13	NO	7	"	500,000

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Examination of Deposits from the Harbor Bottom, Hudson River.

Exam- ina- tion No.	Date of Collec- tion	Location of Samples		Depth in Feet	Color	Other	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact						
1036	Oct. 26, 1879	Hudson River, 200 feet off Jersey shore below ferry slip at Edgewater	Lat 46 49 47 Long 78 50 17	10	0	Gray	H ₂ S	Clay	Polluted 1,100,000
1037	"	"	Lat 40 43 47 Long 78 50 17	10	1	"	"	"	"
1038	"	"	Lat 47 49 47 Long 78 50 17	10	2	"	"	"	600,000
1039	"	"	Lat 40 49 47 Long 78 50 17	10	3	"	"	Un-	750,000
1040	"	"	Lat 40 49 47 Long 78 50 17	10	4	"	"	"	600,000
1041	"	"	Lat 40 49 47 Long 78 50 17	10	5	"	"	"	500,000
1042	"	"	Lat 40 49 47 Long 78 50 17	10	6	"	Bone	"	280,000
1043	"	"	Lat 40 49 47 Long 78 50 17	10	7	"	"	"	280,000
1044	"	"	Lat 40 49 47 Long 78 50 17	10	8	"	"	"	300,000
									210,000

Ex. 96, p. 108

Examination of Deposits from the Harbor Bottom, Newark Bay.

Exam-ination No.	Date of Collection	Location of Sample		Depth in Feet	Color	Odor	Consist-ency	Opinion	Bacteria per Gram
		Approximate	Exact						
1045	Nov. 3, 1909	Newark Bay, 800 feet north of C.N.B. of N.J. bridge 2000 feet off the Elizabeth-Port shore	Lat 40 39 23 Long 74 09 45	6	Black	H ₂ S	Mud	Polluted	8,000,000
1046	"	"	Lat 40 39 23 Long 74 09 45	6	"	"	"	"	3,800,000
1047	"	"	Lat 40 39 23 Long 74 09 45	6	"	"	"	"	3,800,000
1048	"	"	Lat 40 39 23 Long 74 09 45	6	Gray	"	Clay	"	3,800,000
1049	"	"	Lat 40 39 23 Long 74 09 45	6	"	"	Clay	"	3,800,000
1050	"	Newark Bay, 800 feet north of C.N.B. of N.J. bridge 1000 feet off the Elizabeth-Port shore	Lat 40 39 23 Long 74 09 45	6	Black	"	Mud	"	4,000,000
1051	"	"	Lat 40 39 23 Long 74 09 45	6	"	"	"	"	8,000,000
1052	"	"	Lat 40 39 23 Long 74 09 45	6	Gray	"	Clay	Doubtful	3,800,000
1053	"	"	Lat 40 39 23 Long 74 09 45	6	"	"	"	Unpolluted	660,000
1054	"	"	Lat 40 39 23 Long 74 09 45	6	"	"	"	"	450,000
1055	"	"	Lat 40 39 23 Long 74 09 45	6	"	"	"	"	800,000
1056	"	"	Lat 40 39 23 Long 74 09 45	6	Blue & Gray	"	"	"	250,000
1057	"	"	Lat 40 39 23 Long 74 09 45	6	"	"	"	"	380,000

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Examination of Deposits from the Harbor Bottom Newark Bay

Examina- tion No.	Date of Collec- tion	Location of Sample		Depth in feet	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact				
			O	"Water-Und			
1058	Nov. 3, 1909	Newark Bay 1000 ft. north of C.R.R. of N.J. bridge 1000 ft. off Centreville	Lat 40 39 27 Long 74 08 20	6	0	Black Sewage Sand Polluted	3,000,000
1059	"	"	Lat 40 39 27 Long 74 08 20	6	1	Gray Sand	250,000
1060	"	"	Lat 40 39 27 Long 74 08 20	6	2	" Clay & Unpolluted sand	50,000
1061	"	"	Lat 40 39 27 Long 74 08 20	6	3	" Clay & sand	125,000
1062	"	"	Lat 40 39 27 Long 74 08 20	6	4	" Clay & sand	60,000
1063	"	"	Lat 40 39 27 Long 74 08 20	6	5	" Clay & sand	50,000
1064	"	"	Lat 40 39 27 Long 74 08 20	6	6	" "	40,000
1065	"	"	Lat 40 39 27 Long 74 08 20	6	7	" "	20,000
1066	"	Newark Bay 1 1/2 mi. southeast of red buoy #4, 2000 ft. south of L.V.R.R. trestle	Lat 40 41 25 Long 74 06 52	8	0	" Polluted H ₂ S	2,000,000
1067	"	"	Lat 40 41 25 Long 74 06 52	8	1	" Doubtful	1,000,000
1068	"	"	Lat 40 41 25 Long 74 06 52	8	2	" Unpolluted	350,000
1069	"	"	Lat 40 41 25 Long 74 06 52	8	3	" "	250,000
1070	"	"	Lat 40 41 25 Long 74 06 52	8	4	" "	350,000

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Examination of Deposit from the Harbor Bottom, Newark Bay. (Continued)

Exam- ina- tion No.	Date of collec- tion	Location of Samples		Exact Depth in feet	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate	Exact						
1071	Nov. 3, 1909	Newark Bay, 1/2 mile south- east of red buoy No. 4 2000 feet south of L.V. R.R. trestle	Lat 40 41 25 S Long 74 06 52 Lat 40 41 25 S Long 74 06 52	5	Gray	H ₂ S	Clay	Unpolluted	80,000
1072	"	"	"	6	"	"	"	"	60,000

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Examination of Deposits from the Harbor Bottom, Hudson River.

Exam- Date of nation collec- tion	Location of Samples	Depth in		Color	Odor	Sew- age	Con- sist- ency	Opinion	Materia per Gram
		Approximate	Exact						
			0	"	Water Mud				
1073	Nov. 4, Hudson River, opposite Ft. Washington Pt., 500 feet off the New Jersey shore	Lat 40 51 06 Long 74 57 32	12	0	Black	H ₂ S	Mud	Polluted	1,800,000
1074	"	Lat 40 51 06 Long 73 57 32	12	1	Gray	H ₂ S	Clay	unpollut- ed	1,000,000
1075	"	Lat 40 51 06 Long 73 57 32	12	2	"	"	"	"	850,000
1076	"	Lat 40 51 06 Long 73 57 32	12	3	"	"	"	"	700,000
1077	"	Lat 40 51 06 Long 73 57 32	12	4	"	"	"	"	250,000
1078	"	Lat 40 51 06 Long 73 57 32	12	5	"	"	"	"	100,000
1079	"	Lat 40 51 06 Long 73 57 32	12	6	"	"	"	"	180,000
1080	"	Lat 40 51 06 Long 73 57 32	12	7	"	"	"	"	250,000
1081	"	Lat 40 51 06 Long 73 57 32	12	8	"	None	"	"	100,000
1082	"	Lat 40 51 06 Long 73 57 32	12	9	"	"	"	"	13,000
1083	"	Lat 40 51 06 Long 73 57 32	12	10	"	"	"	"	16,000
1084	Nov. 6, Hudson River, opposite W. 157th St., Manhattan, 500 feet off the New Jersey shore	Lat 40 50 31 Long 73 57 54	16	0	Black	H ₂ S	Mud	Polluted	1,800,000
1085	"	Lat 40 50 31 Long 73 57 54	16	1	"	H ₂ S	Mud	"	1,200,000
1086	"	Lat 40 50 31 Long 73 57 54	16	2	Gray	"	Clay	"	500,000
1087	"	Lat 40 50 31 Long 73 57 54	16	3	"	"	"	"	300,000

Ex. 98. p.106

Examination of Deposits from the Harbor Bottom, Hudson River.

Exam- ination No.	Date of collection	Location of Samples		Exact Depth in Feet	Depth in Feet Water Mtd	Color	Odor	Consist- ency	Opinion	Bacteria per gram
		Approximate								
1098	Nov. 6, 1909	Hudson River, opposite St. Manhattan, 800 feet off the New Jersey shore	Lat 40 50 31 Long 73 57 54	16	4	Gray	H ₂ S	Clay Polluted		200,000
1099	"	"	Lat 40 50 31 Long 73 57 54	16	5	"	"	"		
1090	"	"	Lat 40 50 31 Long 73 57 54	16	6	"	None	"	Unpollut- ed	400,000
1091	"	"	Lat 40 50 31 Long 73 57 54	16	7	"	"	"	"	120,000
1092	"	Hudson River, opposite St. Manhattan, 800 feet off the New Jersey shore	Lat 40 46 40 Long 74 00 20	35	0	Black	H ₂ S	Mud Polluted		80,000
1093	"	"	Lat 40 46 40 Long 74 00 20	35	1	"	"	"		2,400,000
1094	"	Hudson River, opposite St. Manhattan, 800 feet off the New Jersey shore	Lat 40 46 40 Long 74 00 20	35	2	"	"	"		2,000,000
1095	"	"	Lat 40 46 40 Long 74 00 20	35	3	Gray	"	Clay	"	1,800,000
1096	"	"	Lat 40 46 40 Long 74 00 20	35	4	"	"	"	"	800,000
1097	"	"	Lat 40 46 40 Long 74 00 20	35	5	"	None	"		600,000
1098	"	"	Lat 40 46 40 Long 74 00 20	35	6	"	"	"	Unpollut- ed	400,000
1099	"	"	Lat 40 46 40 Long 74 00 20	35	7	"	"	"	"	60,000
1100	"	"	Lat 40 46 40 Long 74 00 20	35	8	"	"	"	"	40,000
			Lat 40 46 40 Long 74 00 20	35	8	"	"	"	"	20,000

Ex. 96, p. 107